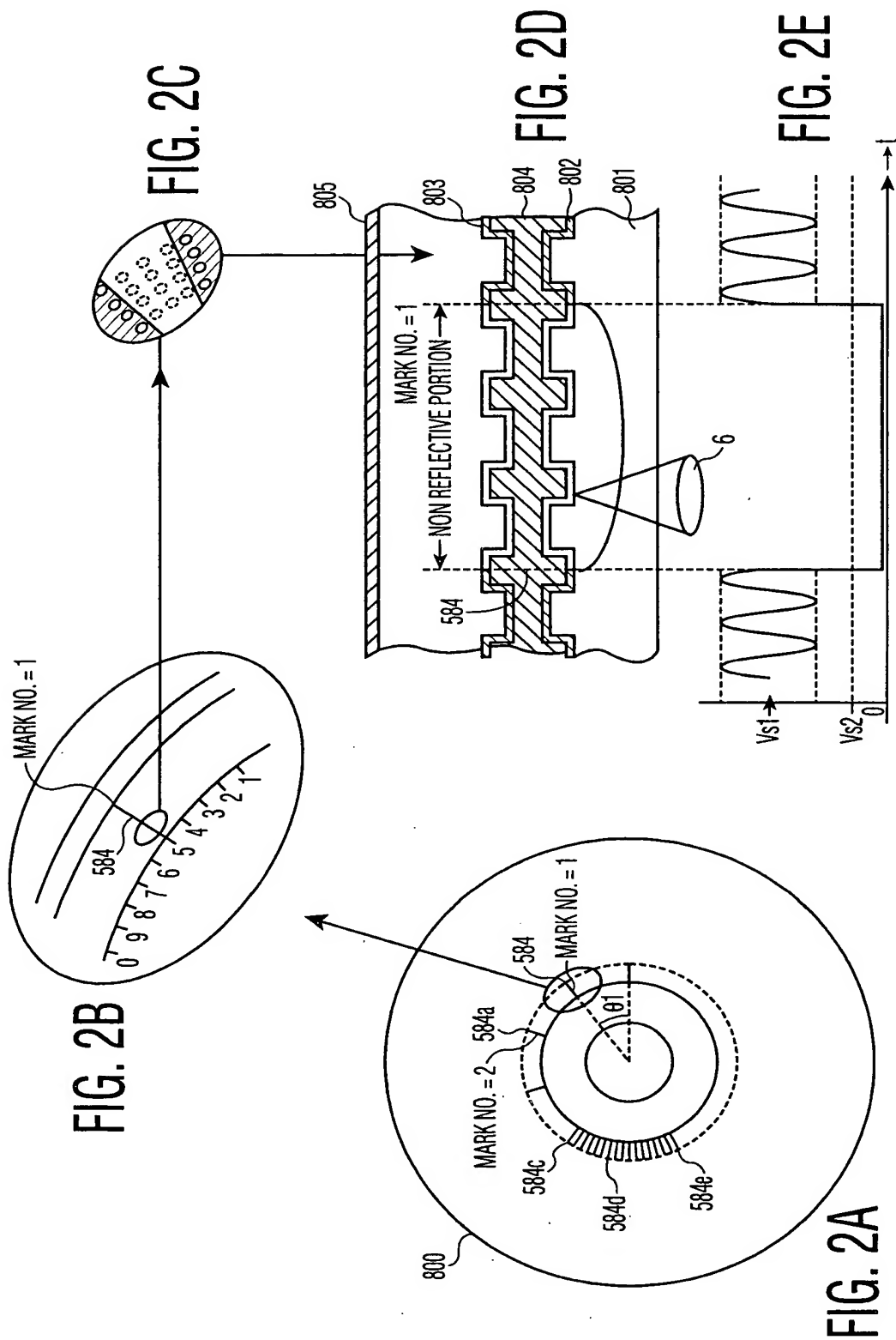


FIG. 1

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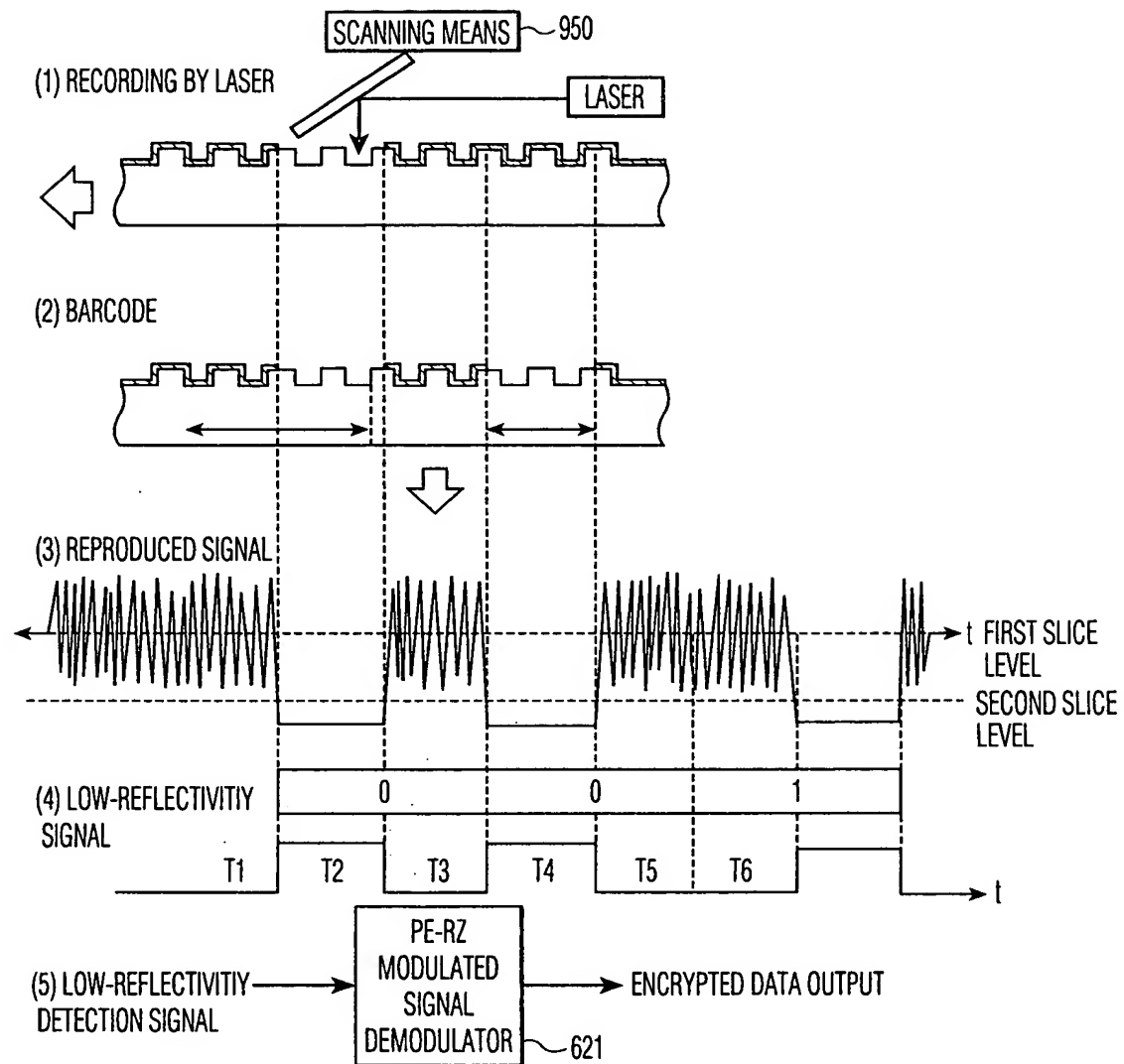
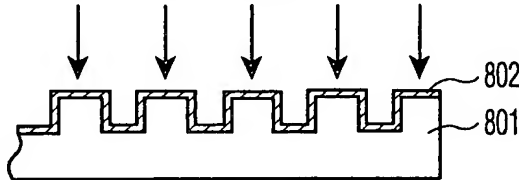


FIG. 3

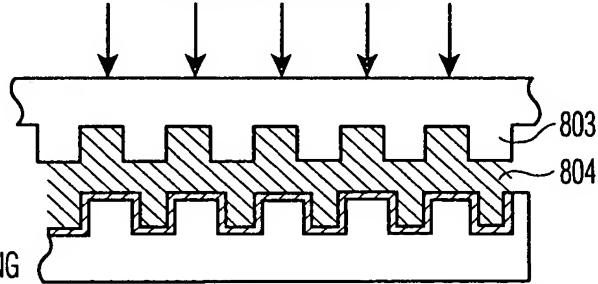
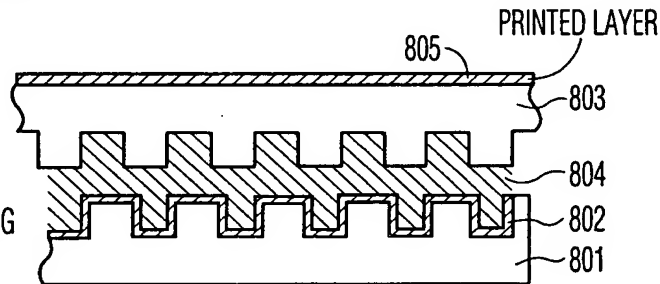
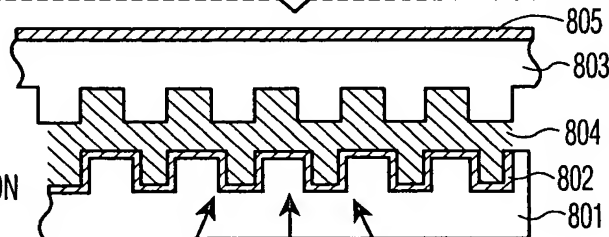
FIRST DISK FABRICATION PROCESS

STEP (1)
FORMING

SPUTTERING

STEP (2)
REFLECTIVE
FILM FORMATION

ULTRAVIOLET RADIATION

STEP (3)
LAMINATION
AND HARDENINGSTEP (4)
LABEL PRINTINGSECONDARY
RECORDING
PROCESSSTEP (5)
FORMATION
OF FIRST
OPTICAL
MARK

PULSED LASER 813



FIG. 4

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①

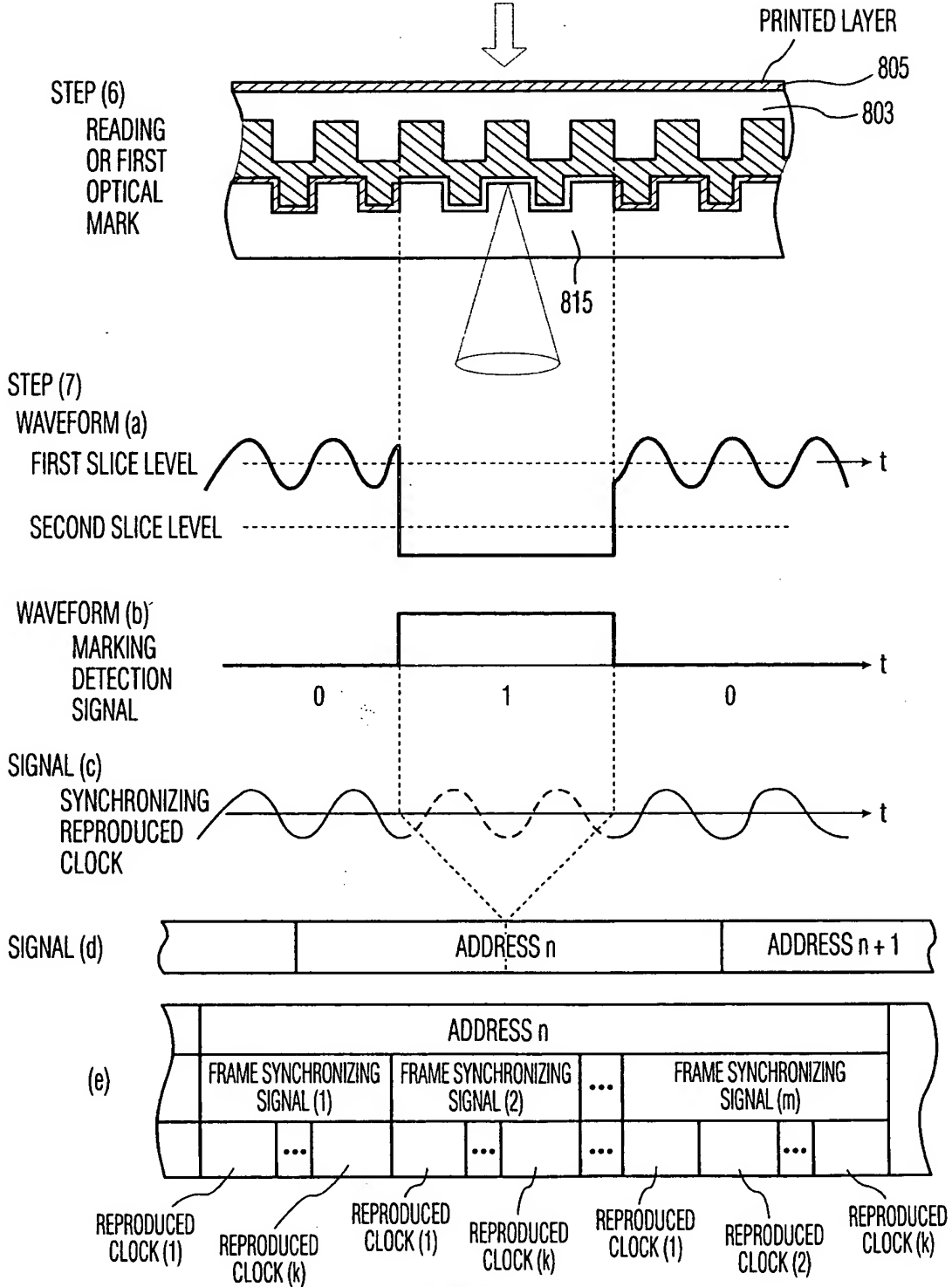


FIG. 5

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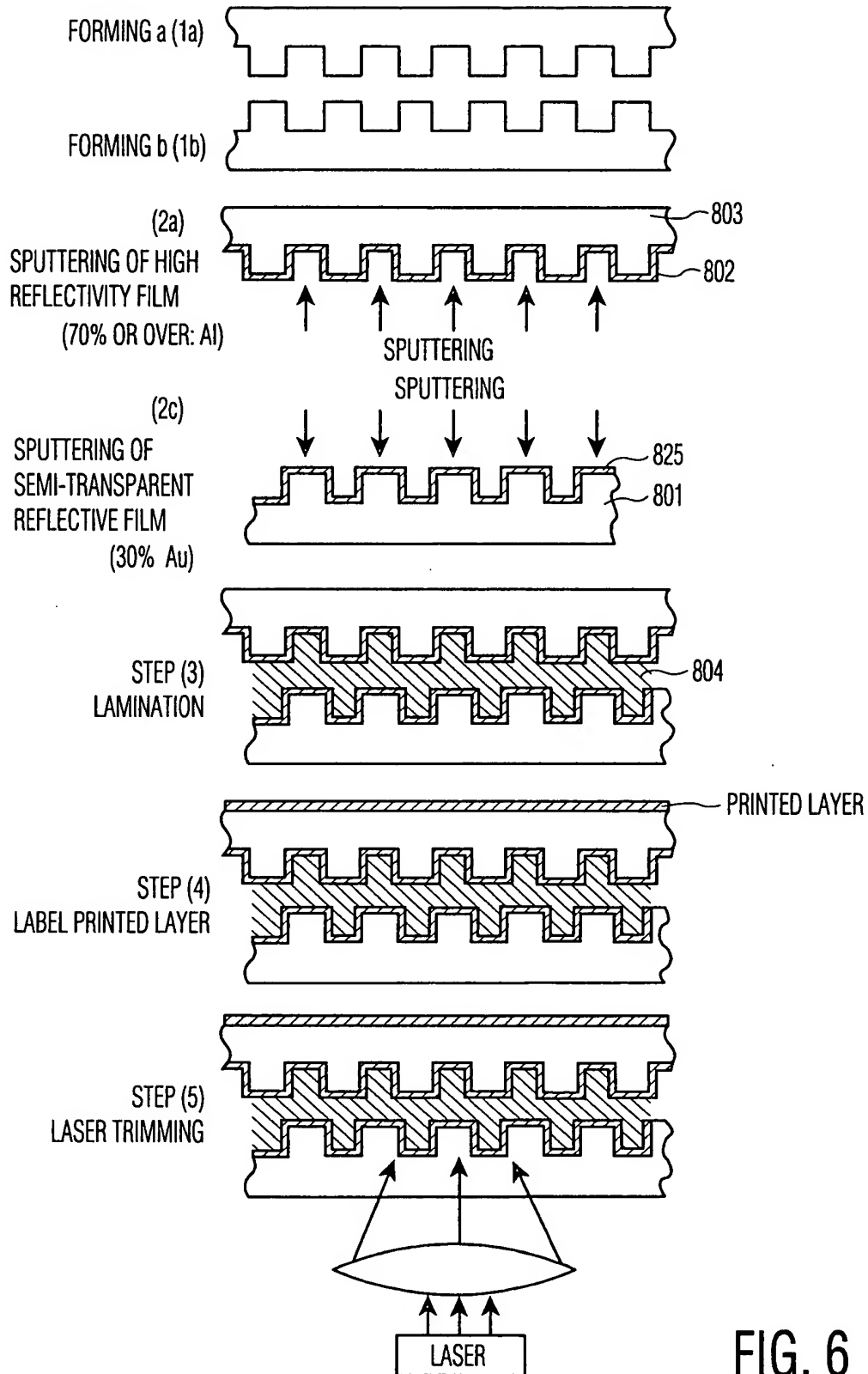
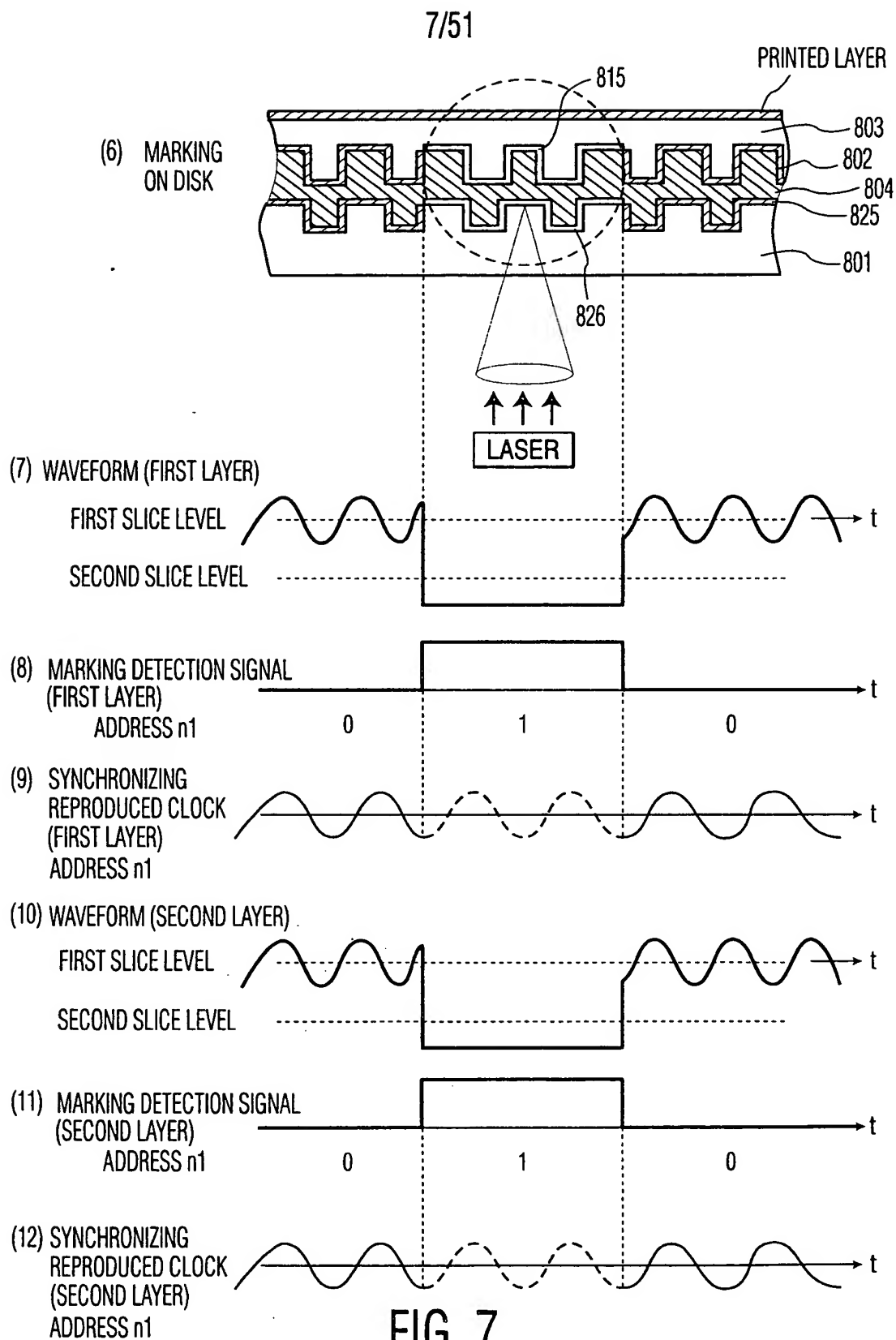


FIG. 6



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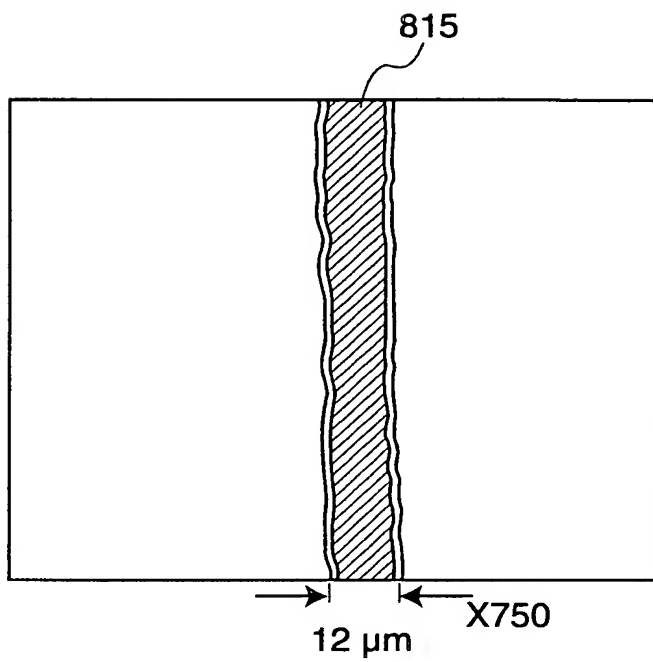


FIG. 8A

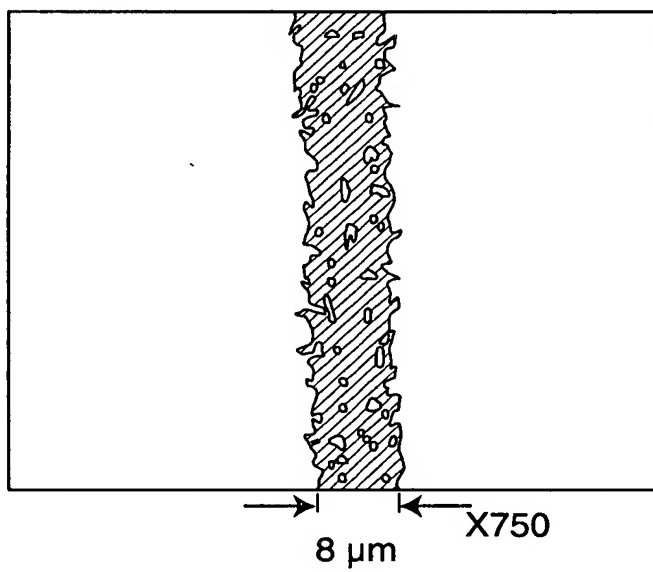


FIG. 8B

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FIG. 9A

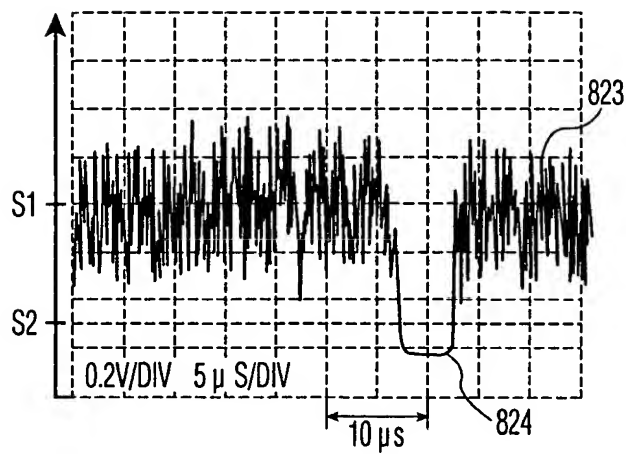


FIG. 9B

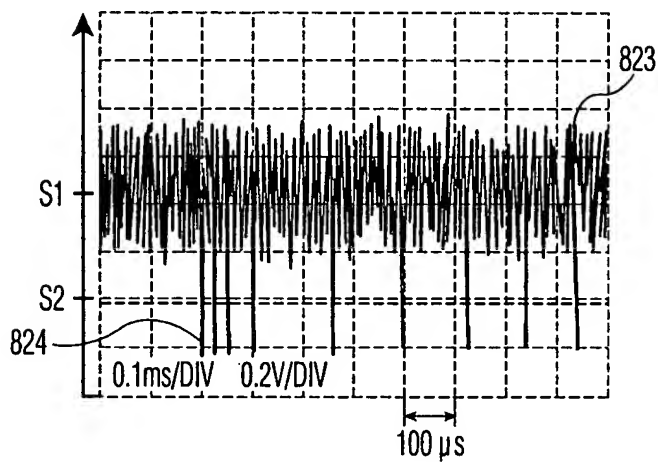


FIG. 9C

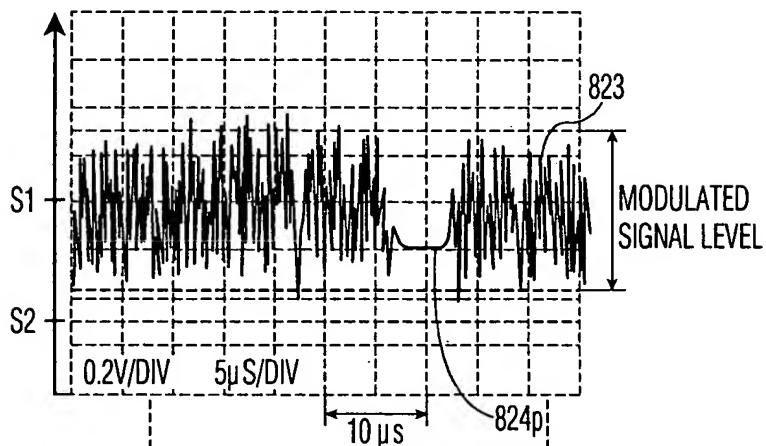
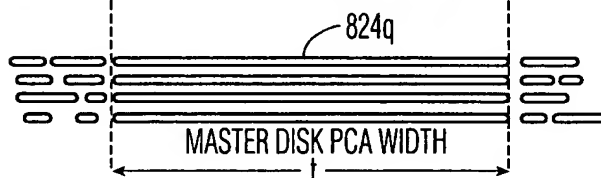


FIG. 9D



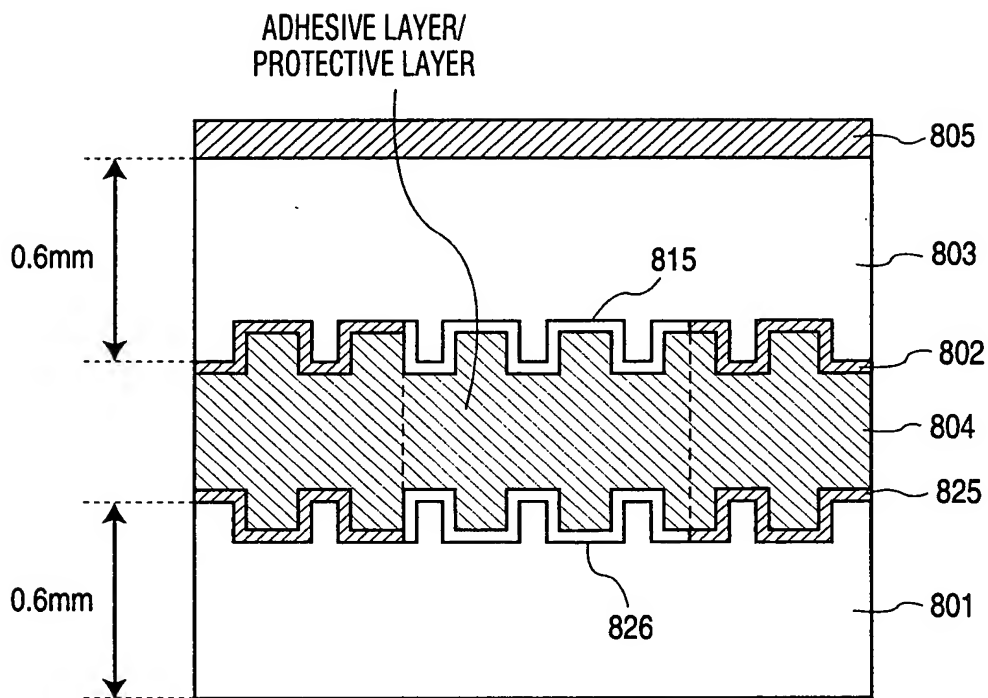


FIG. 10A

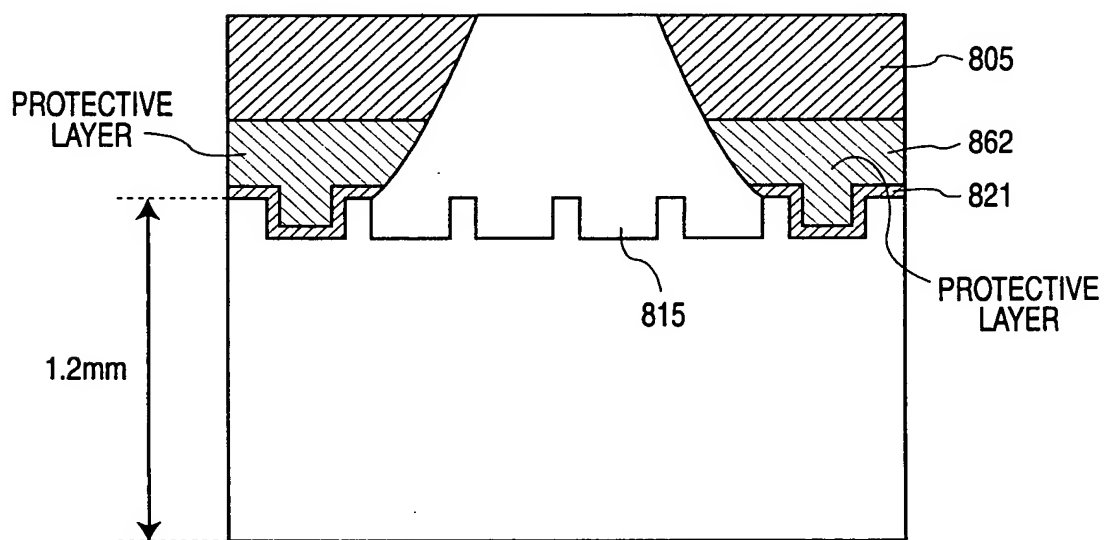


FIG. 10B

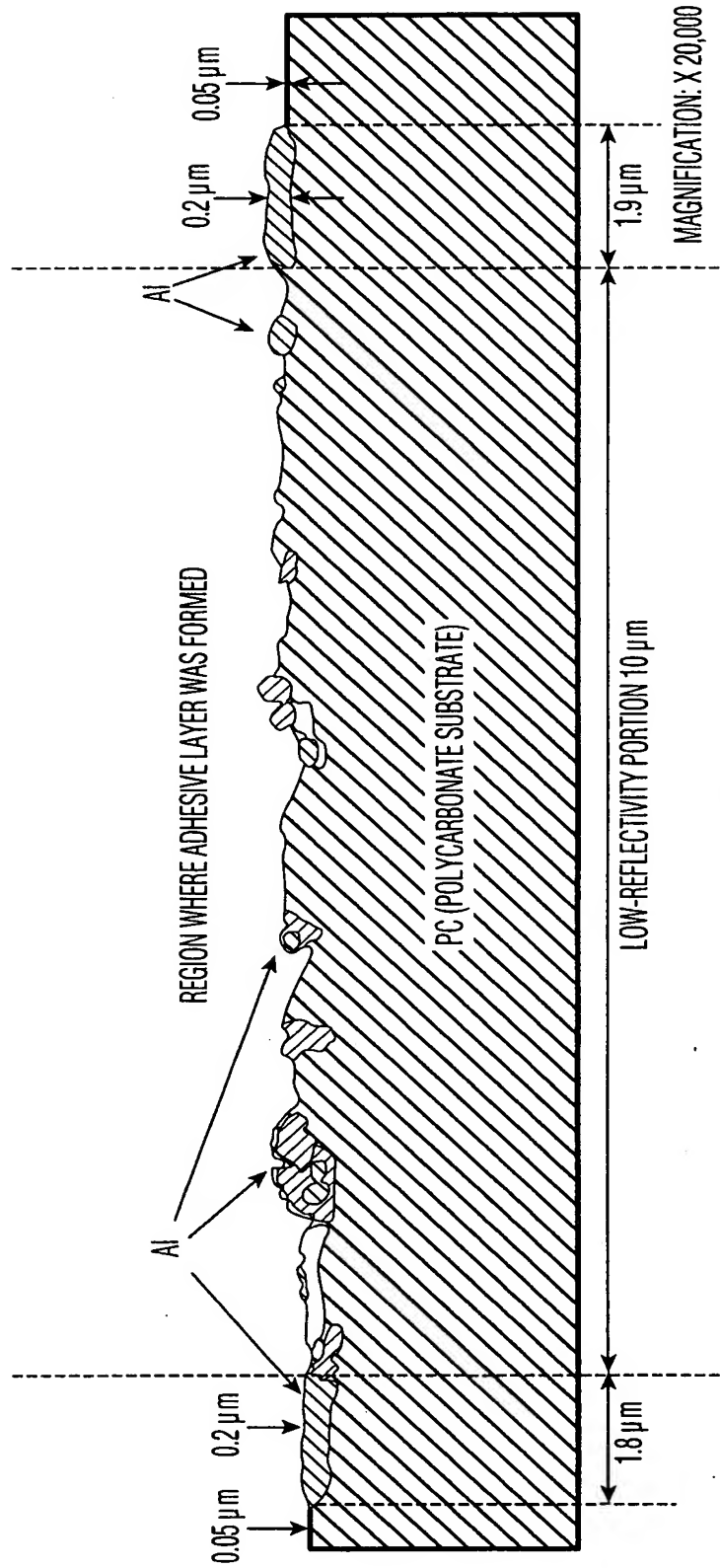


FIG. 11

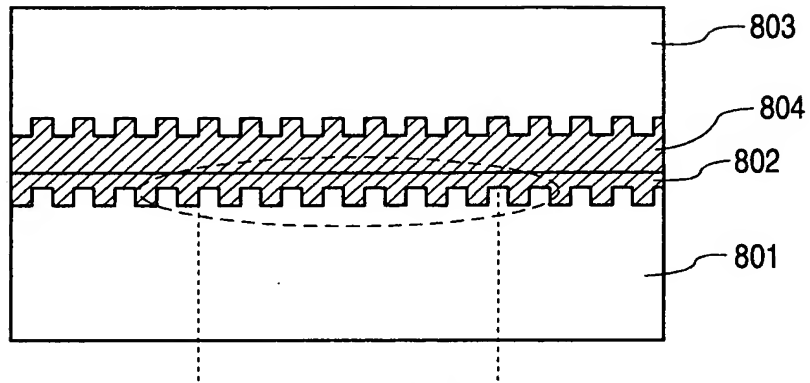


FIG. 12A

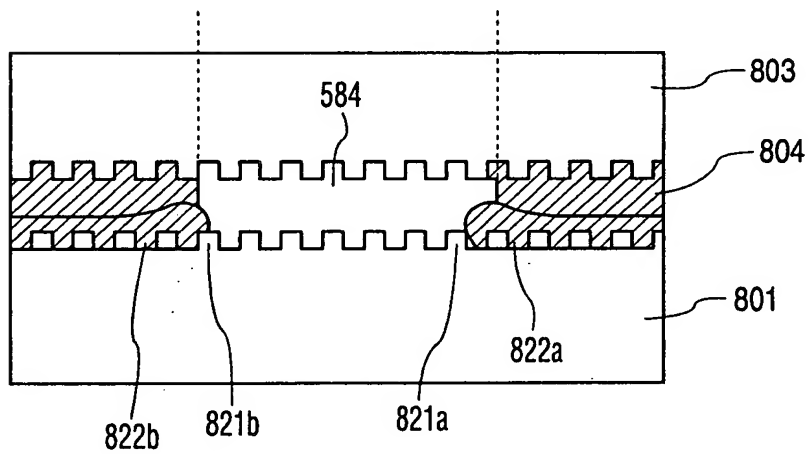


FIG. 12B

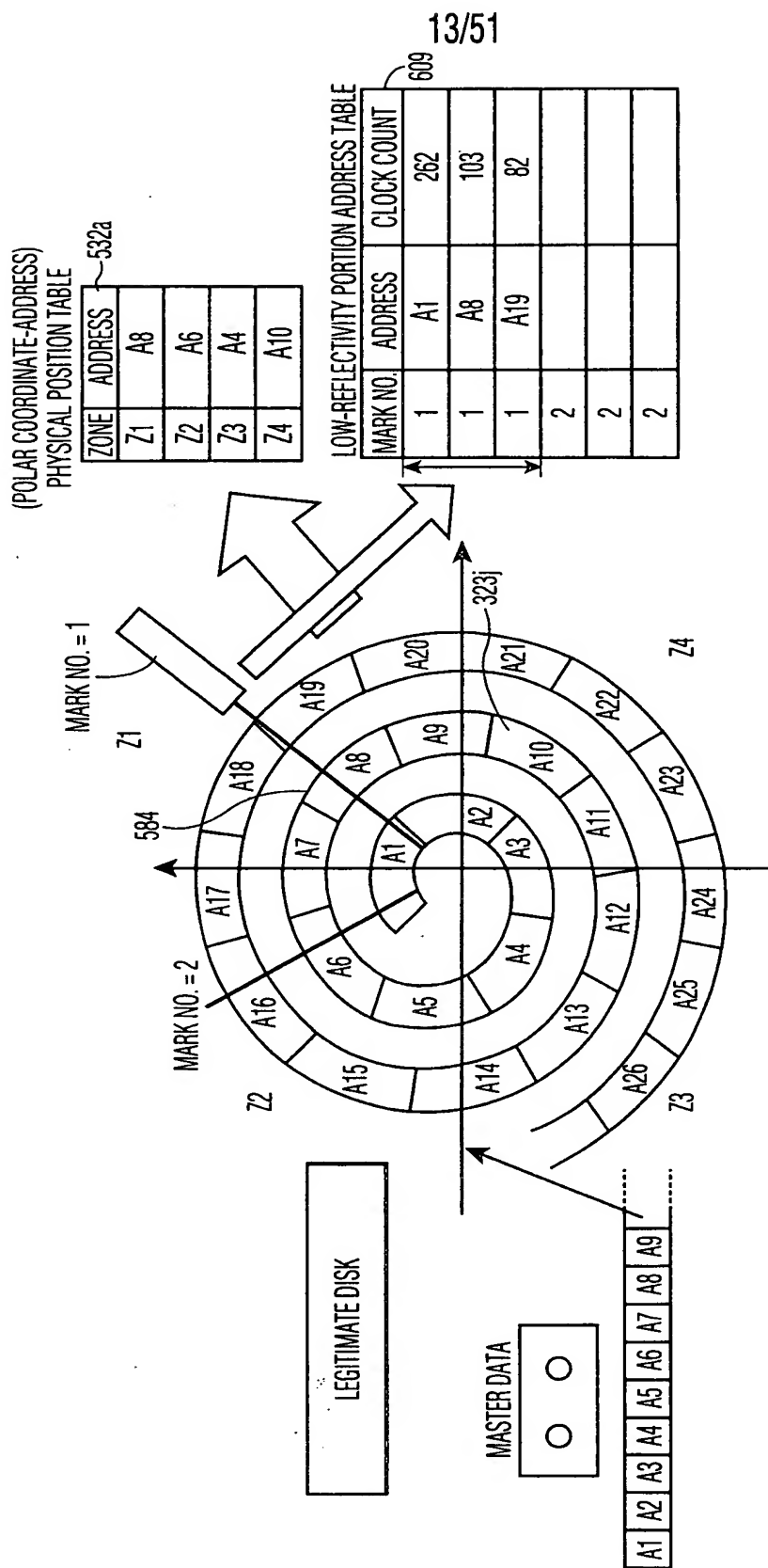


FIG. 13A

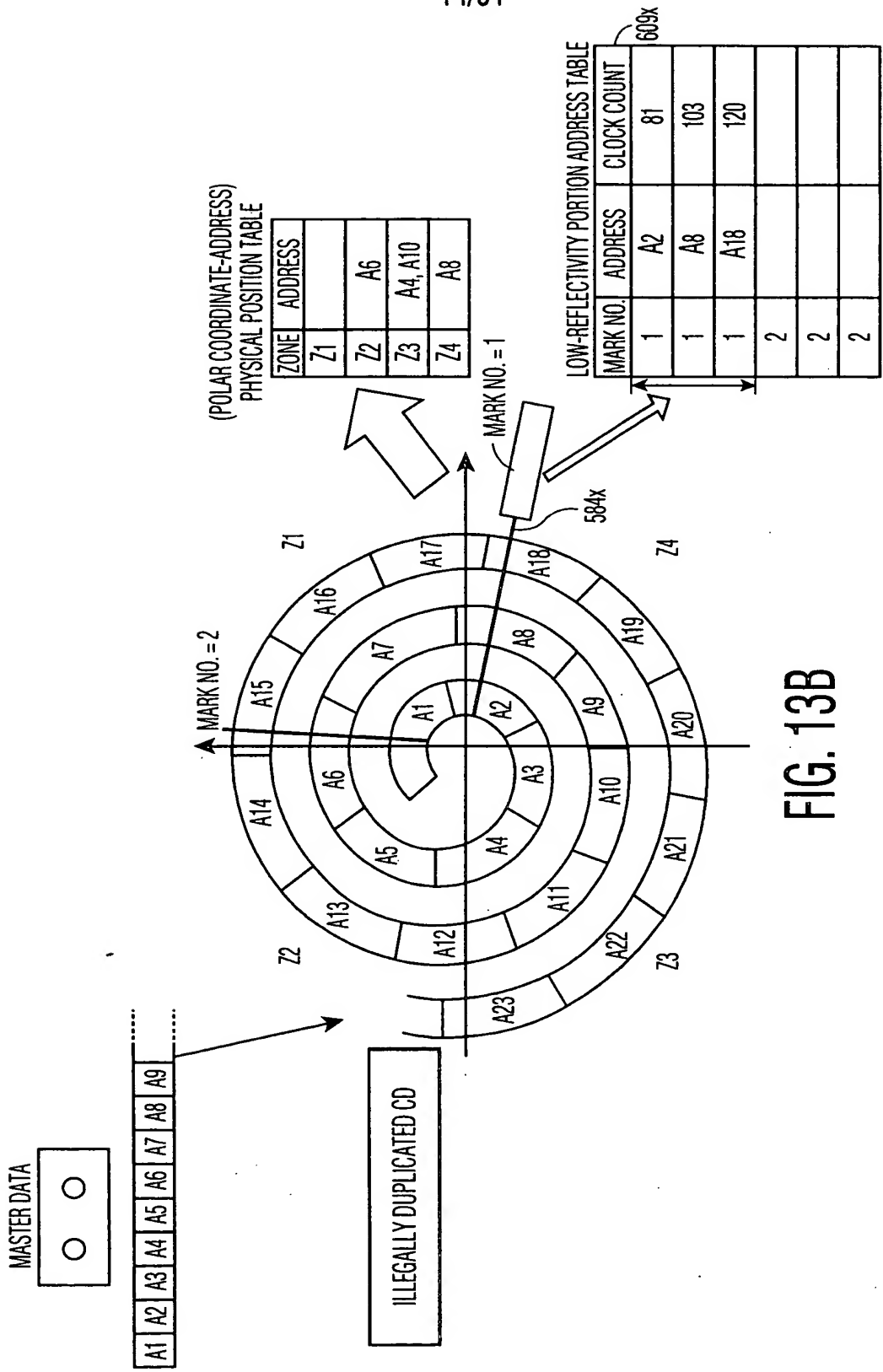


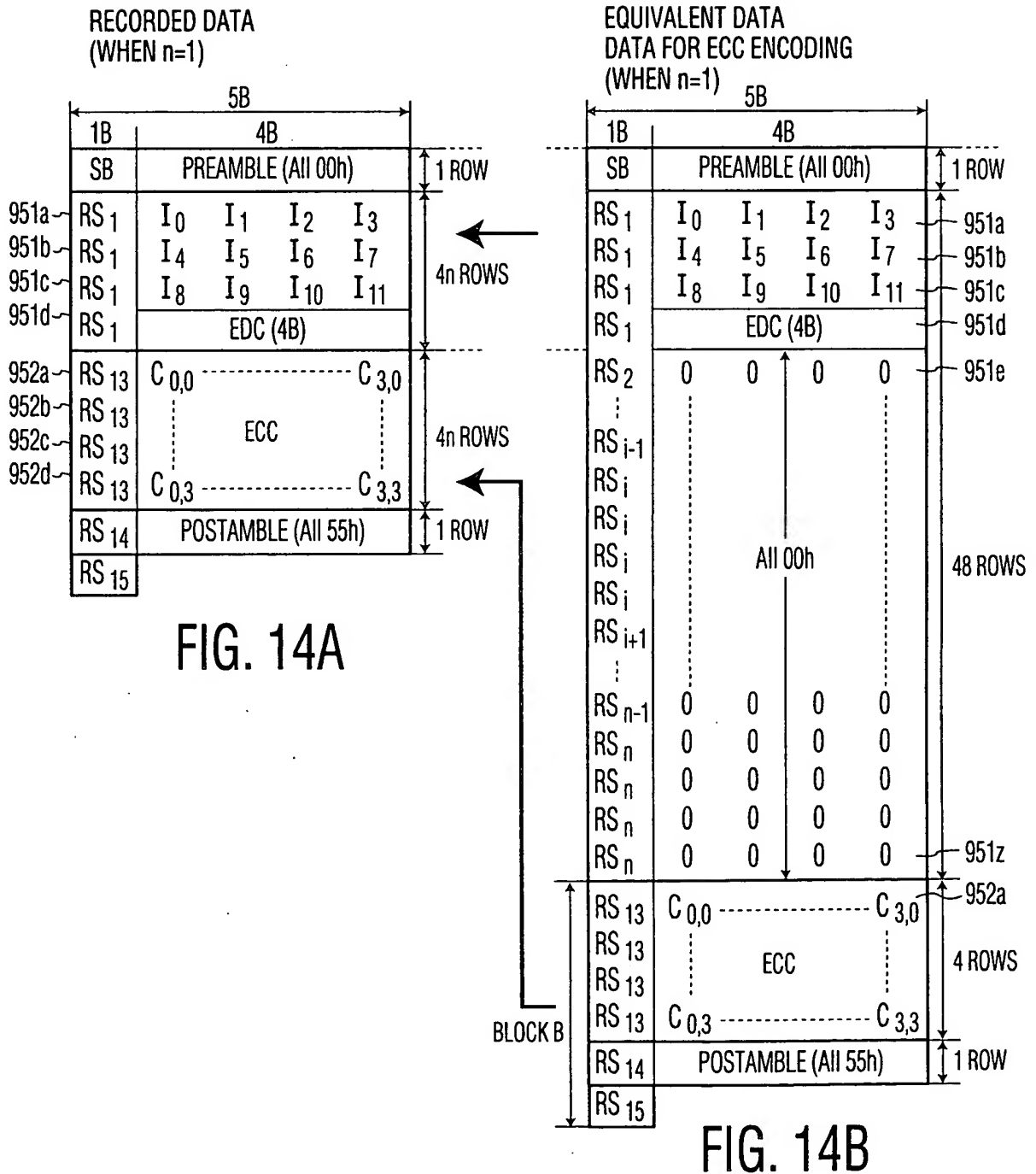
FIG. 13B

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FIG. 14A
FIG. 14B

FIG. 14C
FIG. 14D

FIG. 14



TYPICAL EQUATION
FOR EDC COMPUTATION
EDC (ERROR DETECTION CODE) :

$$EDC_{PCA}(x) = \sum_{i=0}^{31} b_i \cdot x^i$$

$$I_{PCA}(x) = \sum_{i=32}^{128n-31} b_i \cdot x^i$$

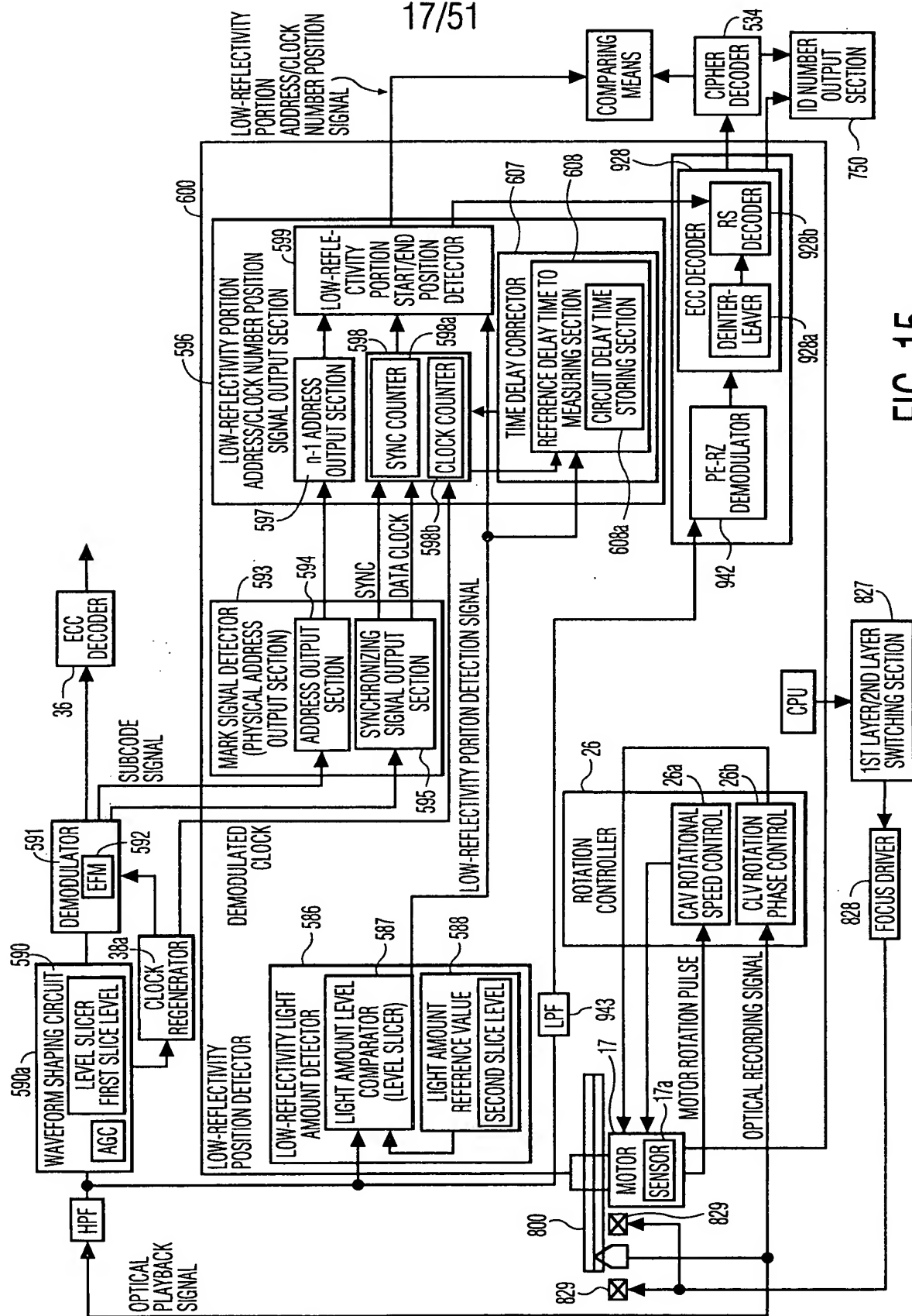
FIG. 14C

TYPICAL EQUATION
FOR EDC COMPUTATION
ECC (ERROR CORRECTION CODE) :

$$R_{PCA}(x) = \sum_{i=48}^{51} I_{j+4i} \cdot x^{51-i}$$

$$I_{PCA}(x) = \sum_{i=0}^{4n-2} I_{j+4i} \cdot x^{51-i} + D_j \cdot x^{52-4n},$$

FIG. 14D



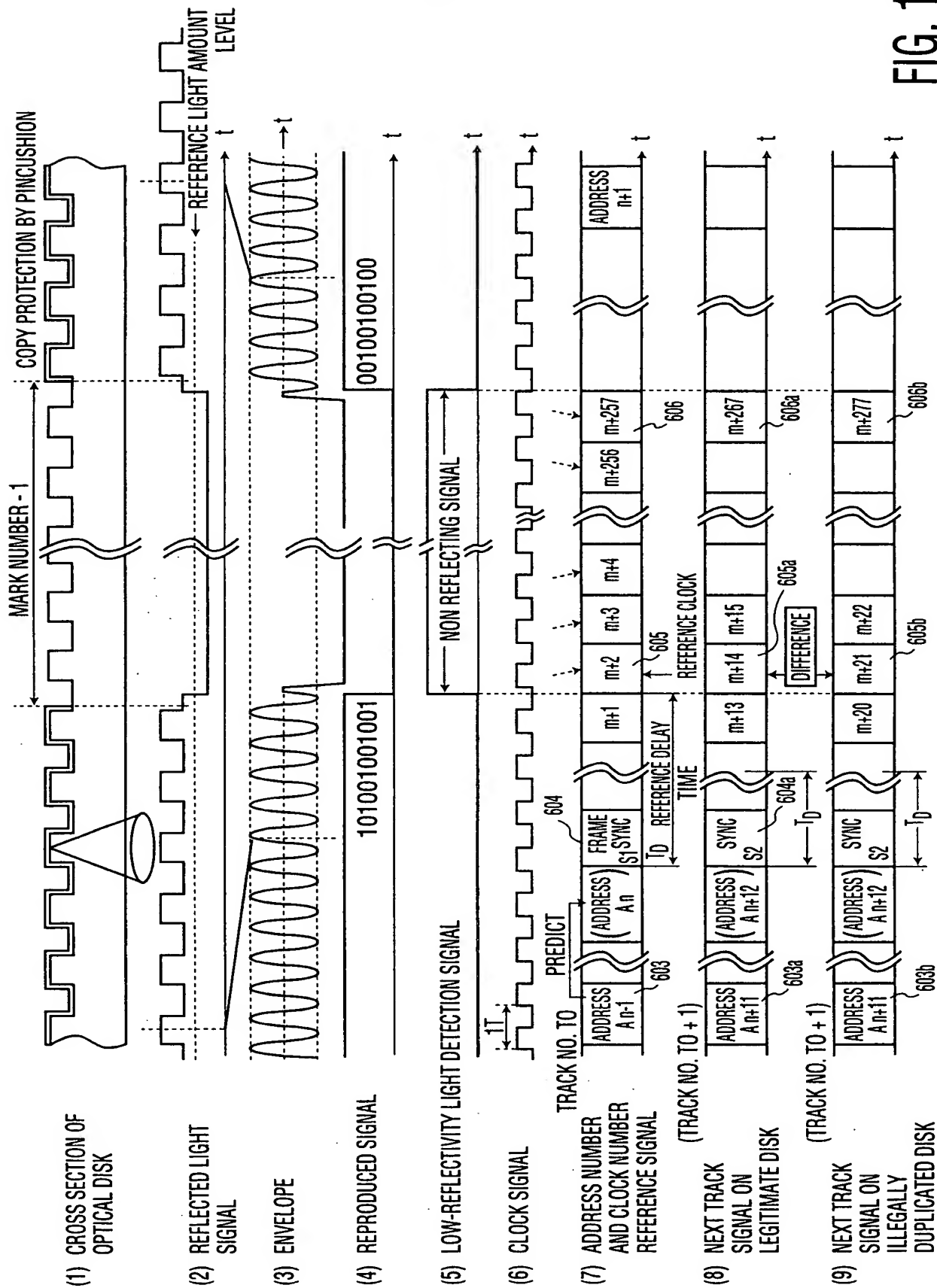


FIG. 16

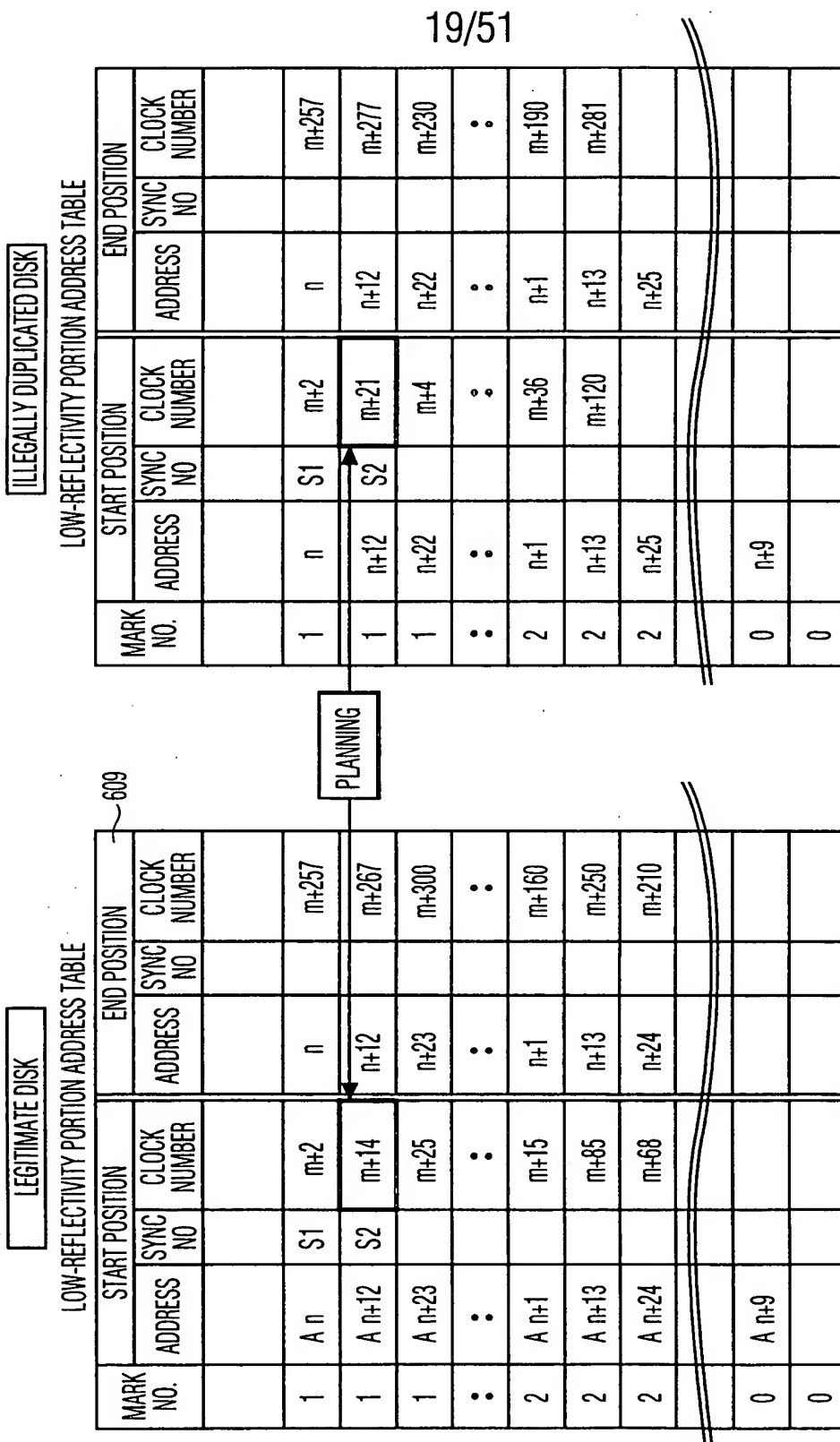


FIG. 17



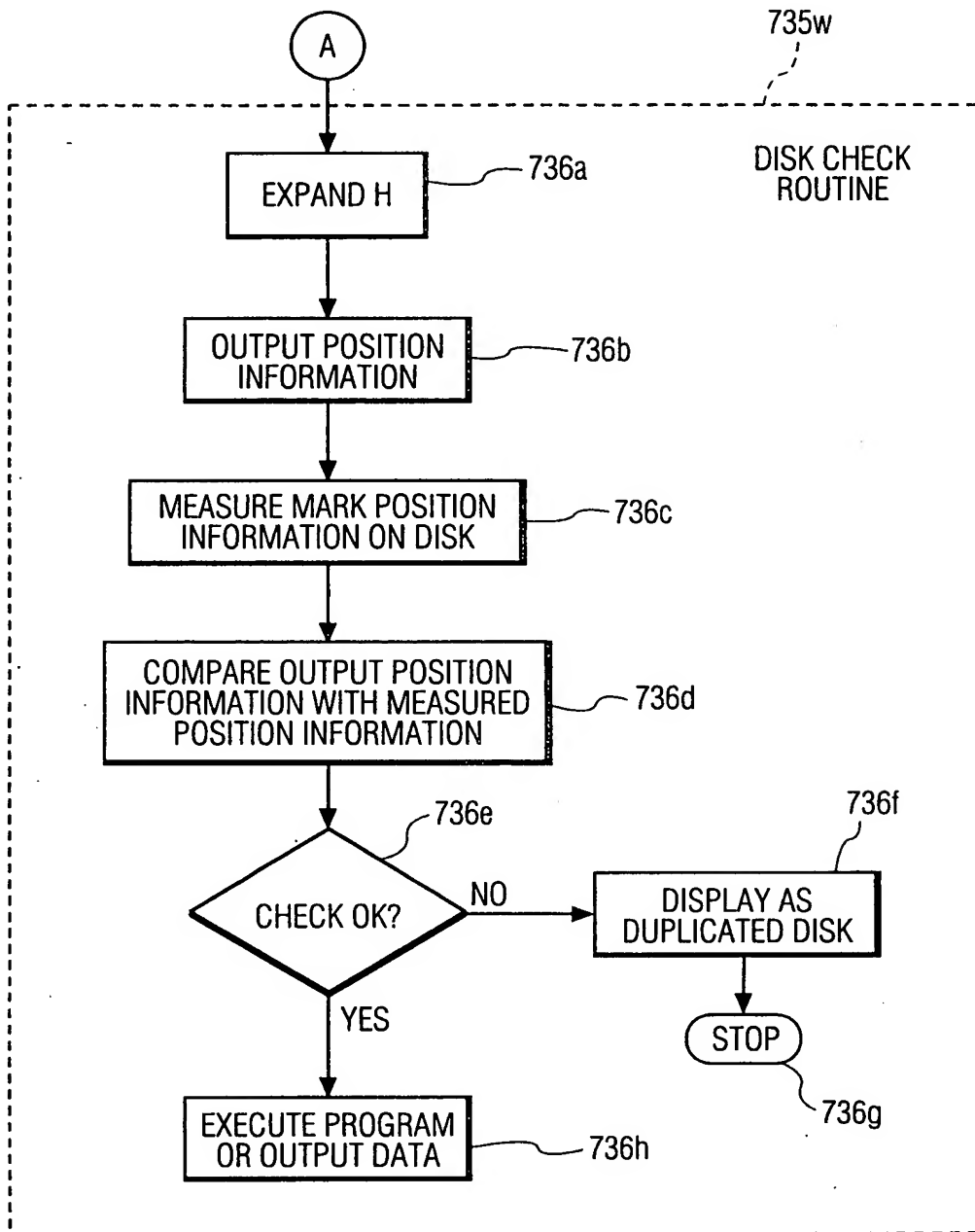


FIG. 18B

PROGRAM IN REPRODUCTION APPARATUS FOR DETECTING
OPTICAL MARK WITH INCREASED ACCURACY OR STABILITY

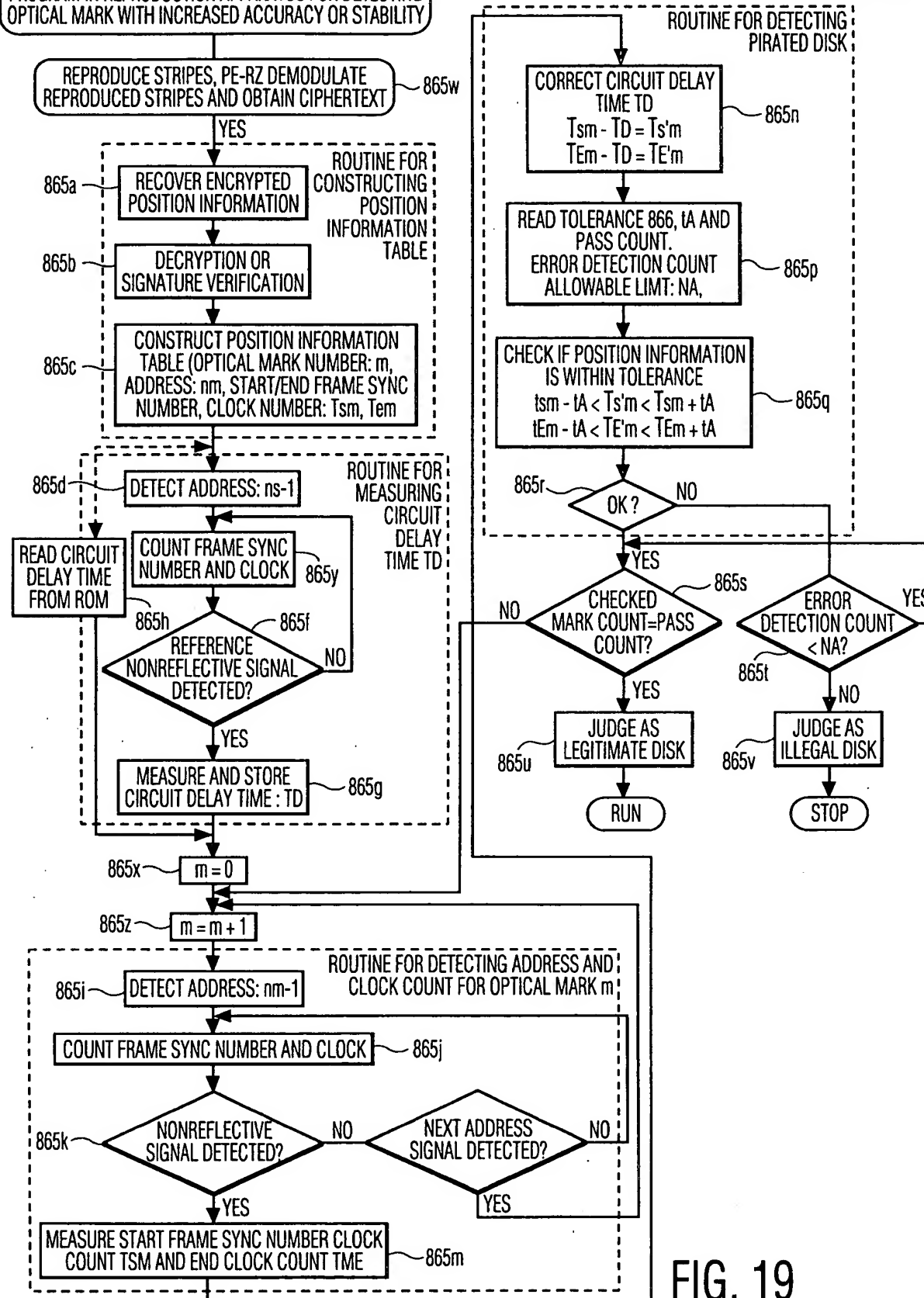
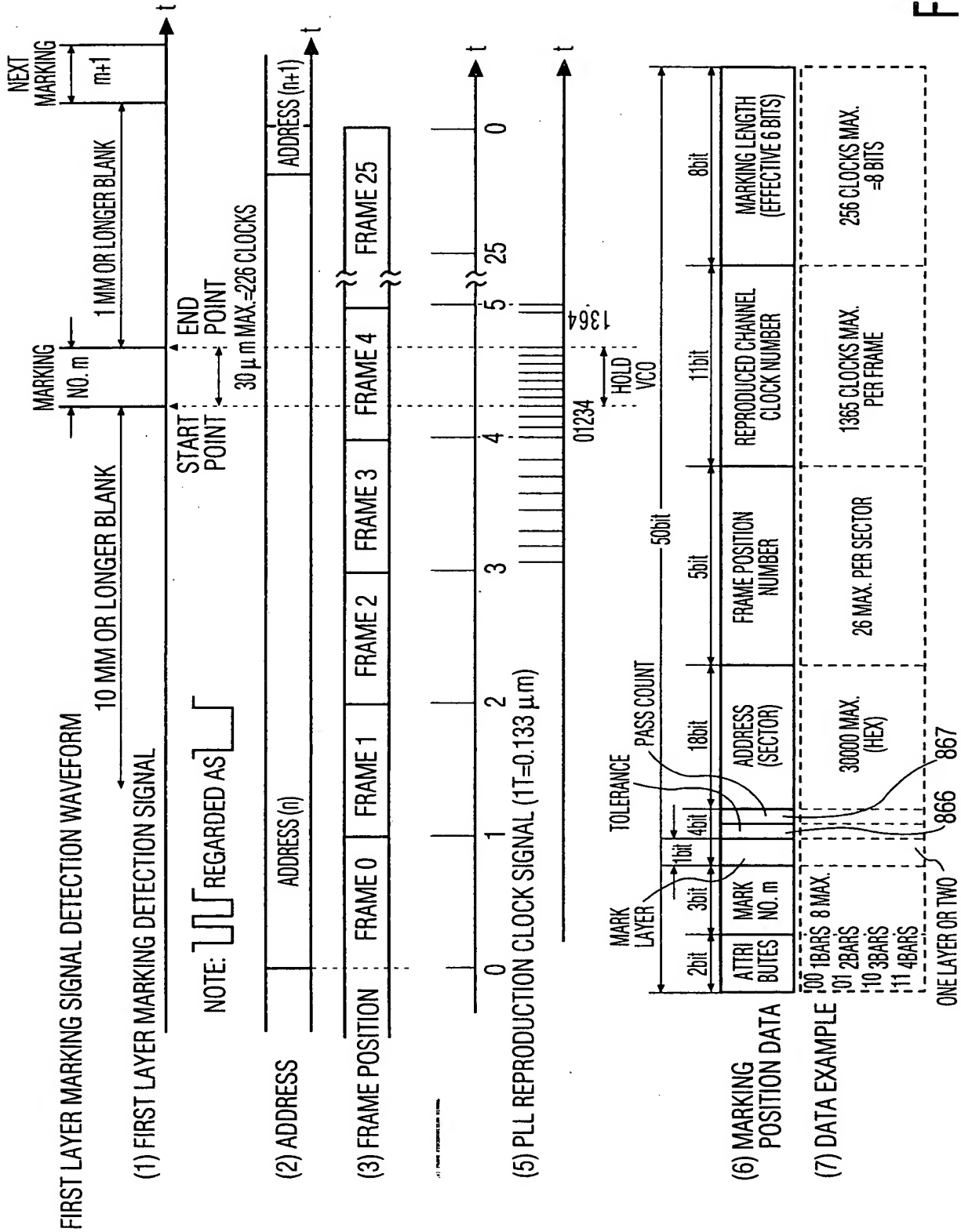
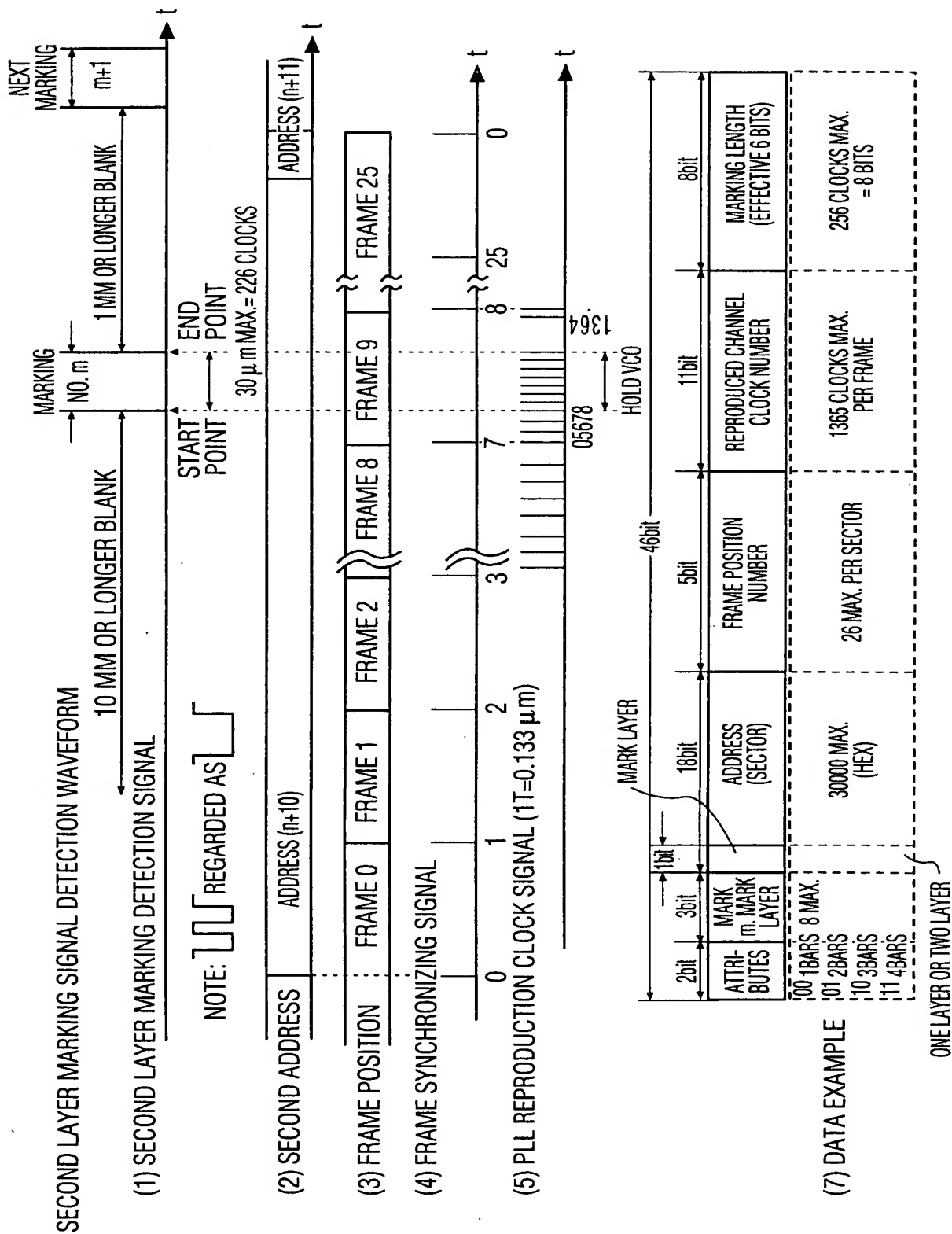


FIG. 19

FIG. 20







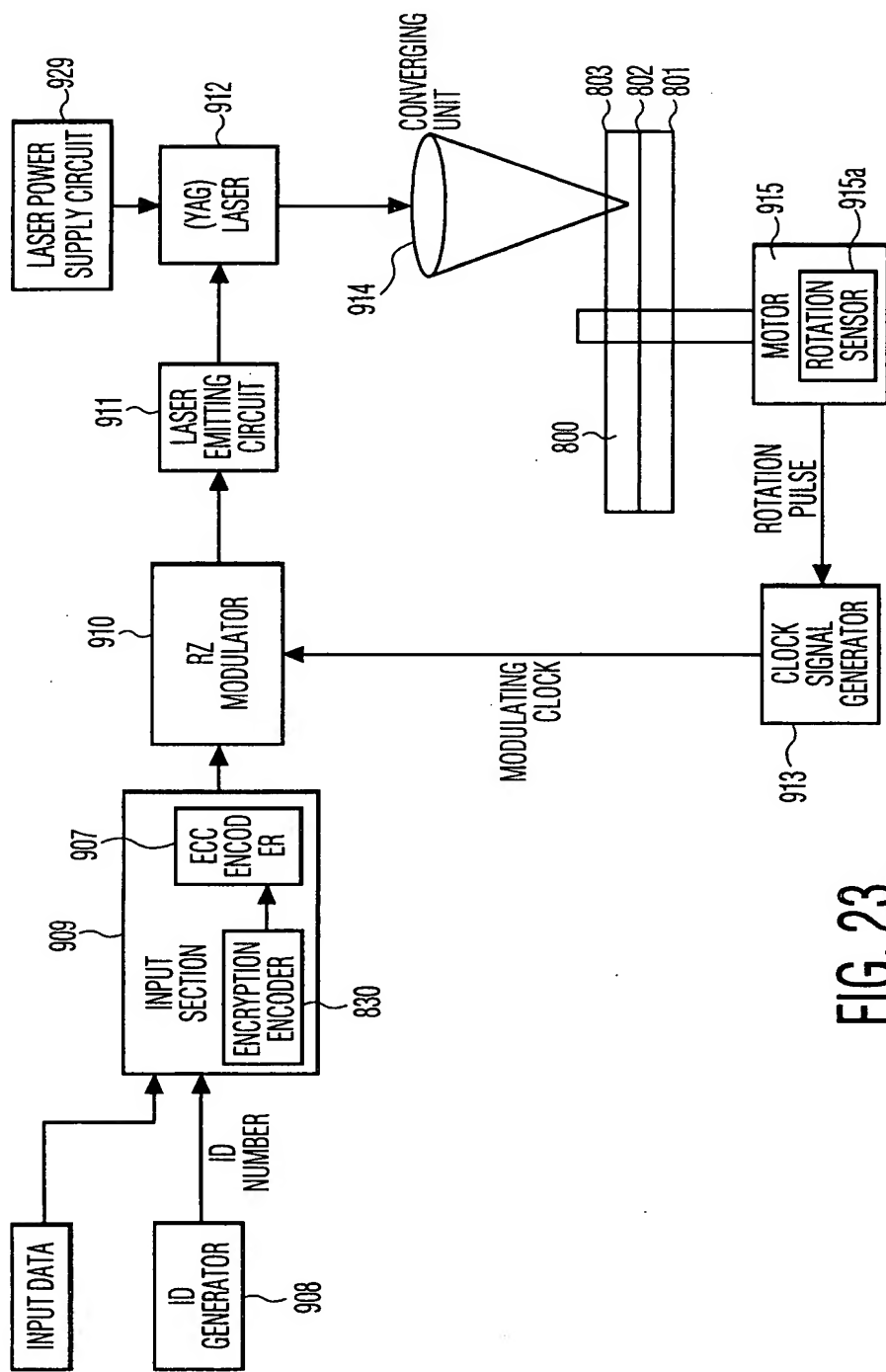
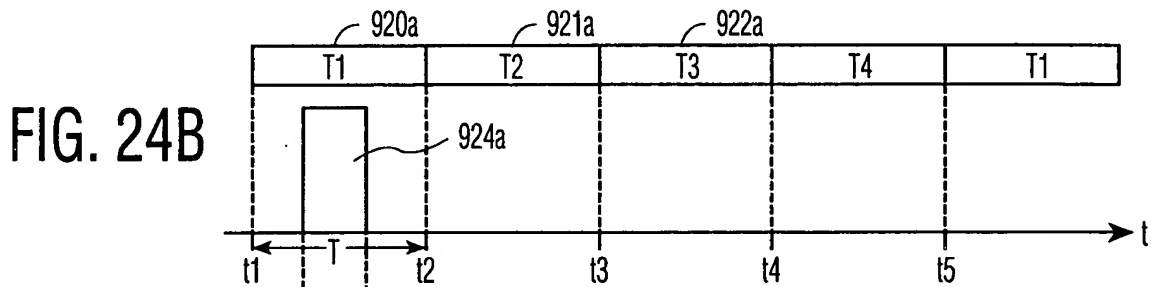


FIG. 23

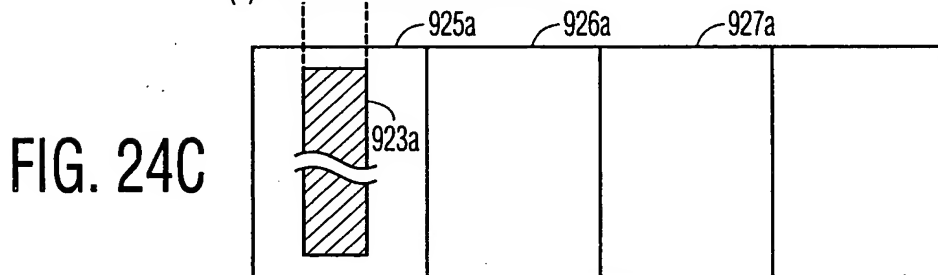
RZ RECORDING
MODULATION CLOCK
BASED ON ROTATION
PULSE



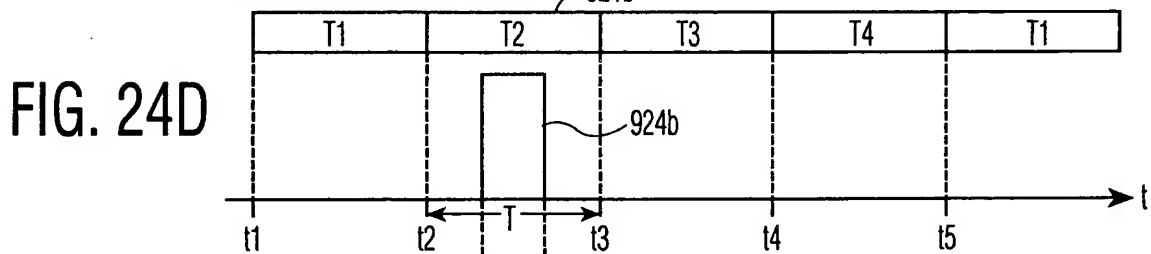
FIG. 24A (1) RECORDED SIGNAL OF "00"



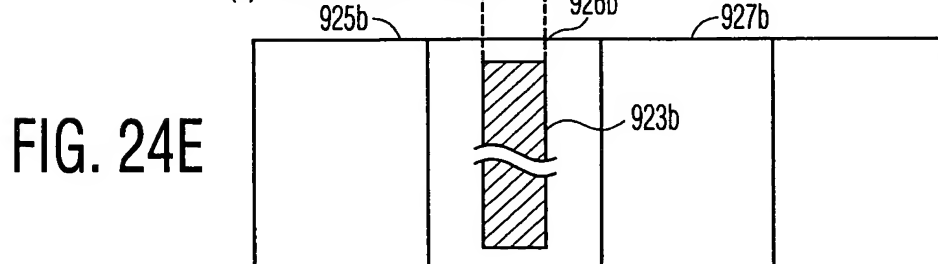
(2) TRIMMING PATTERN OF "00"



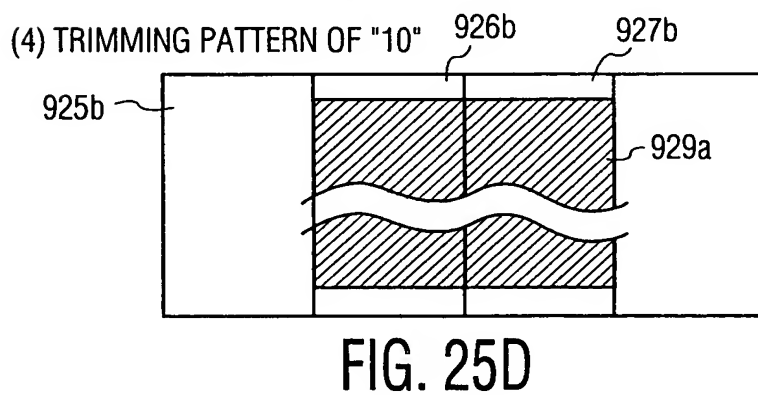
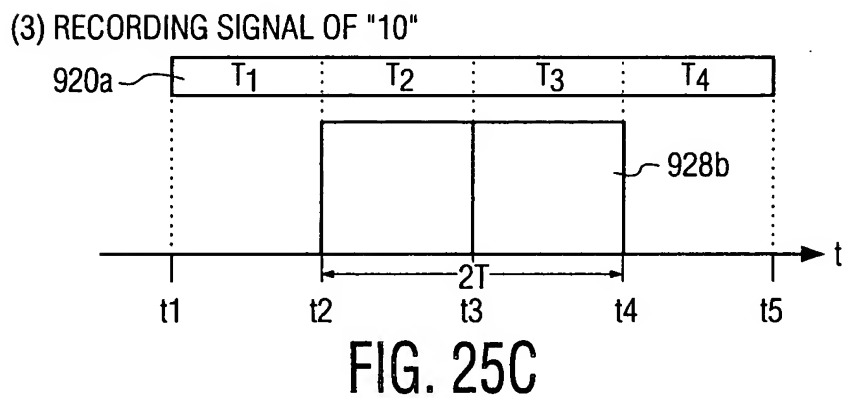
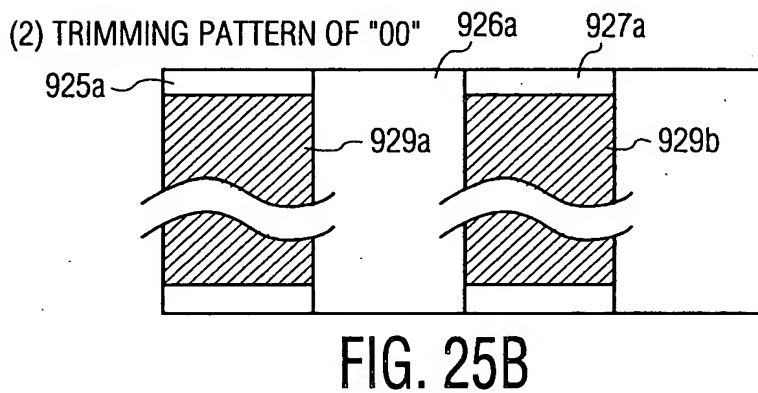
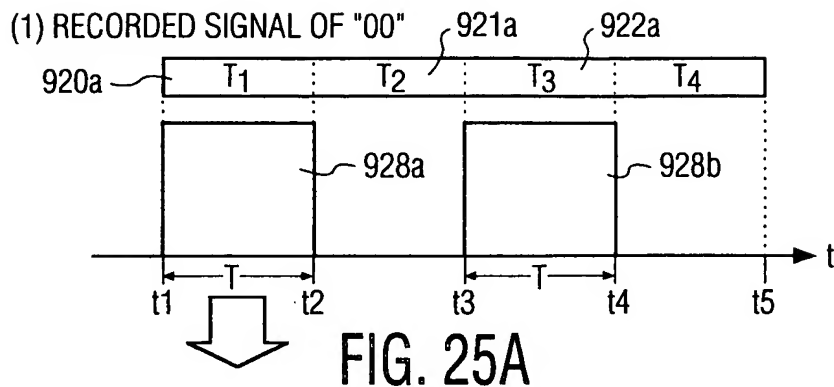
(3) RECORDED SIGNAL OF "01"



(4) TRIMMING PATTERN OF "01"



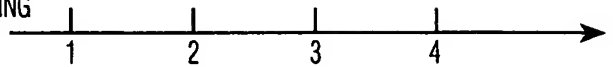
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PE-RZ RECORDING

RECORDING

CLOCK



(1) RECORDED SIGNAL OF "0"

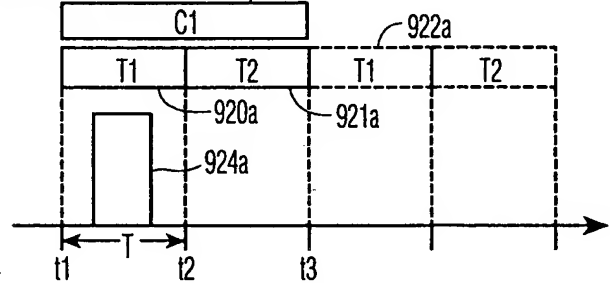


FIG. 26A

(2) TRIMMING PATTERN OF "0"

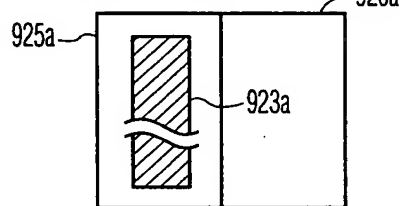


FIG. 26B

(3) RECORDED SIGNAL OF "1"

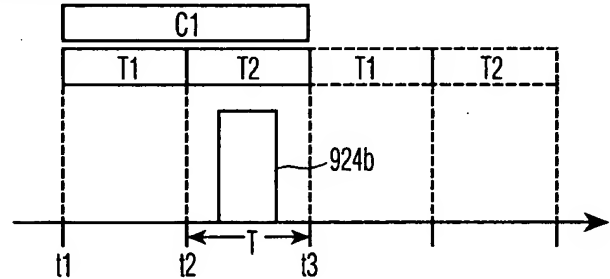


FIG. 26C

(4) TRIMMING PATTERN OF "1"

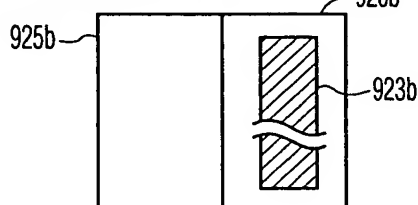


FIG. 26D

(4) RECORDED SIGNAL OF "010"

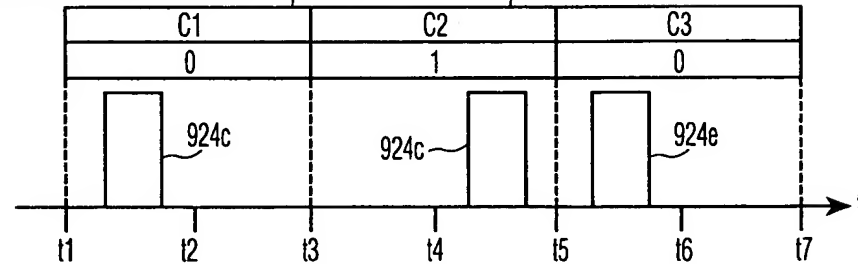


FIG. 26E

FIG. 27A

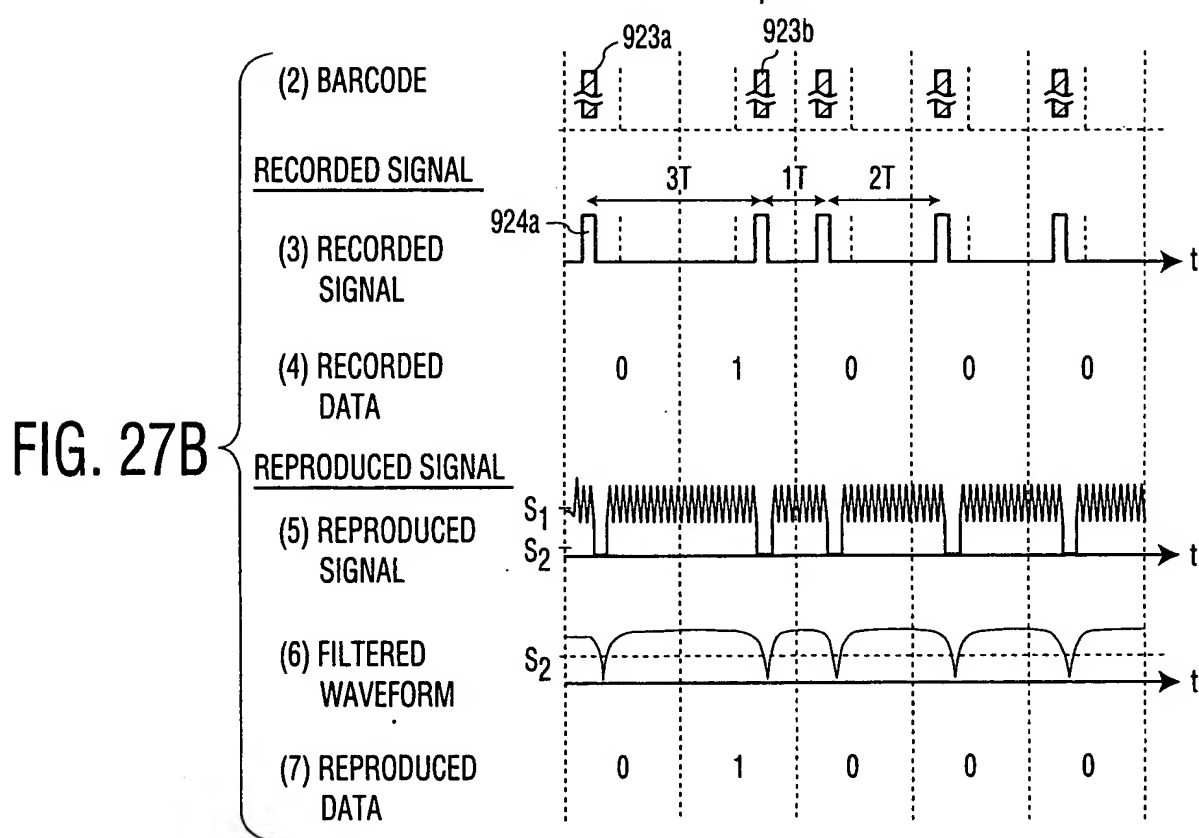
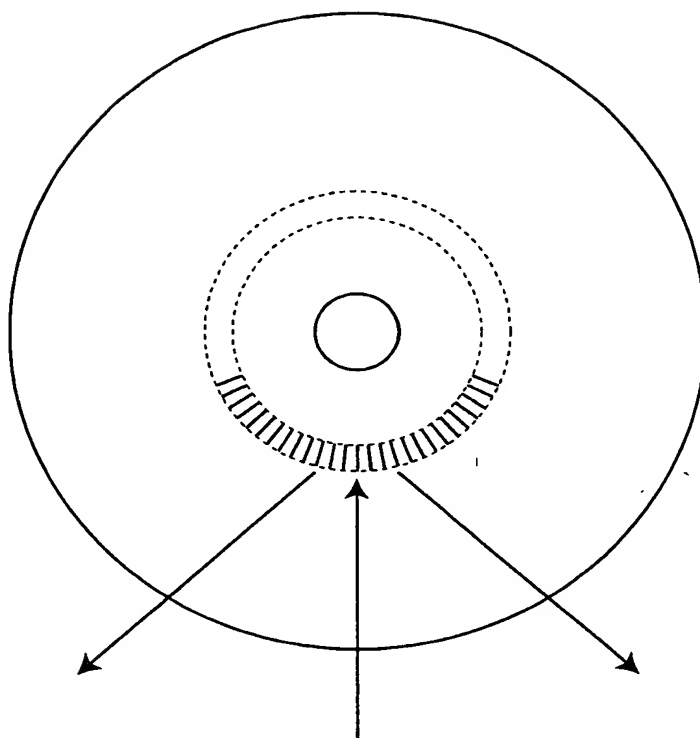


FIG. 28A

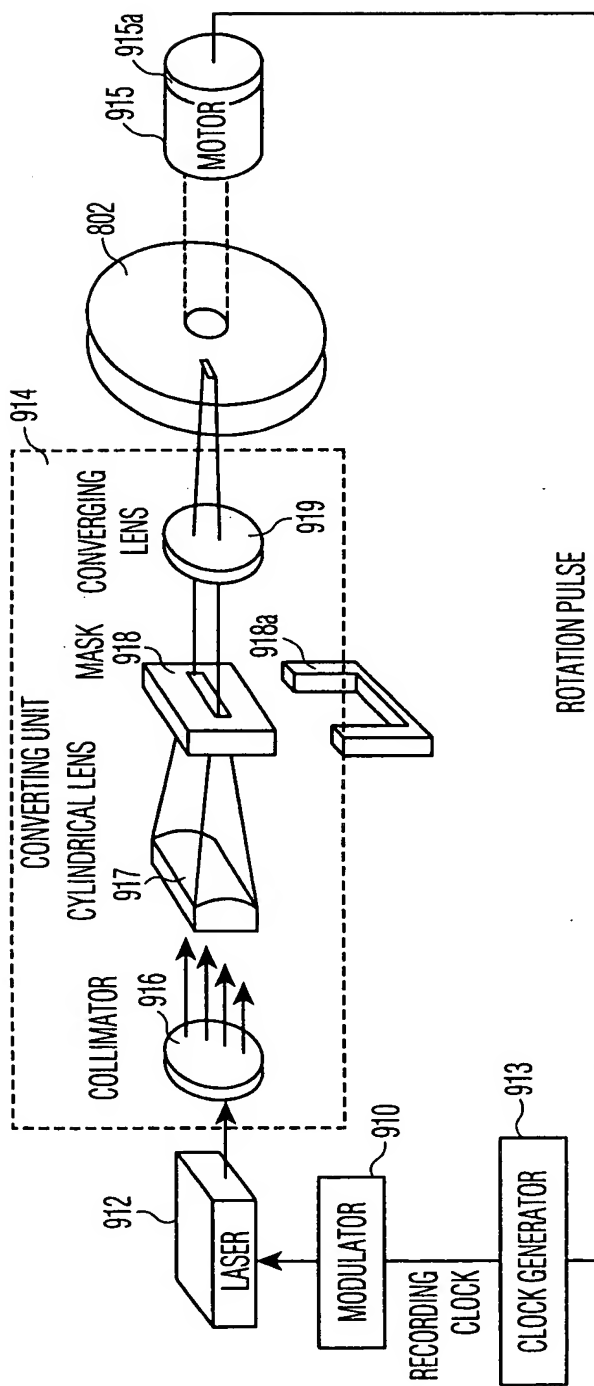
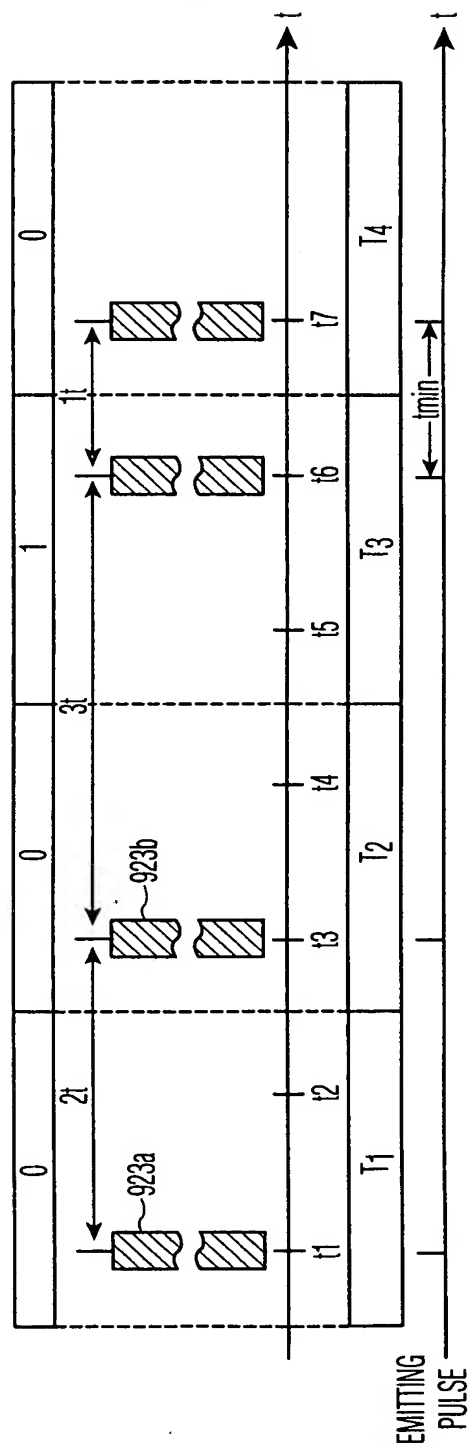


FIG. 28B



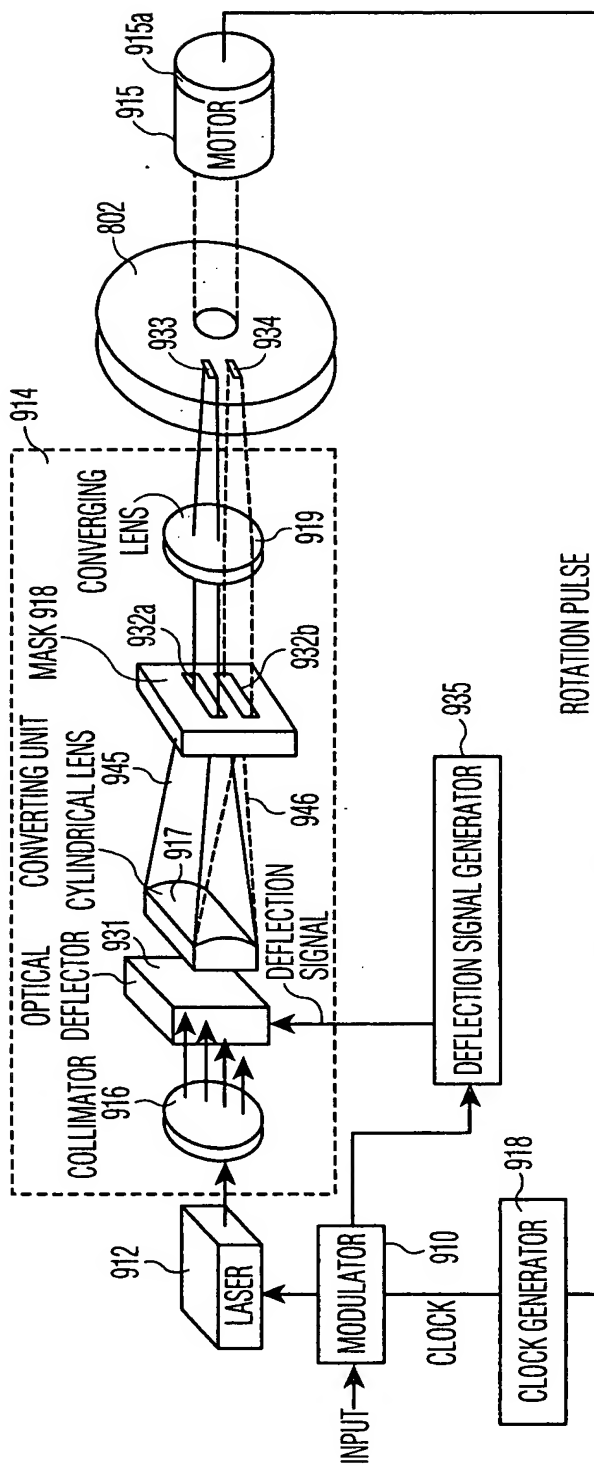


FIG. 29A

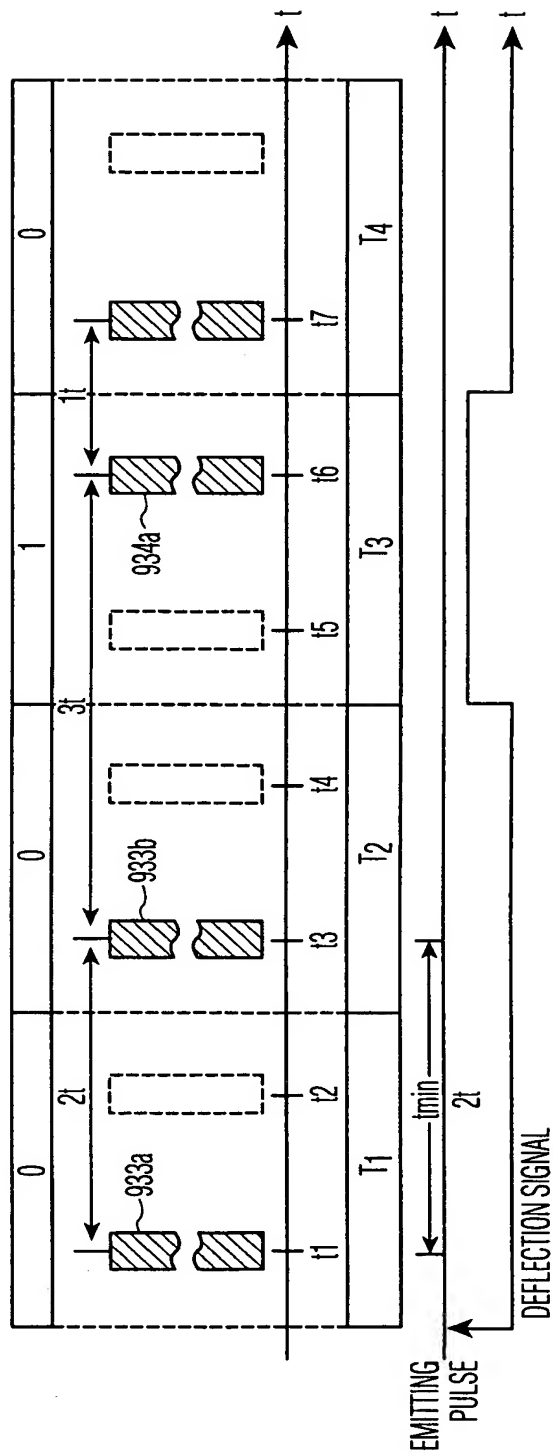


FIG. 29B

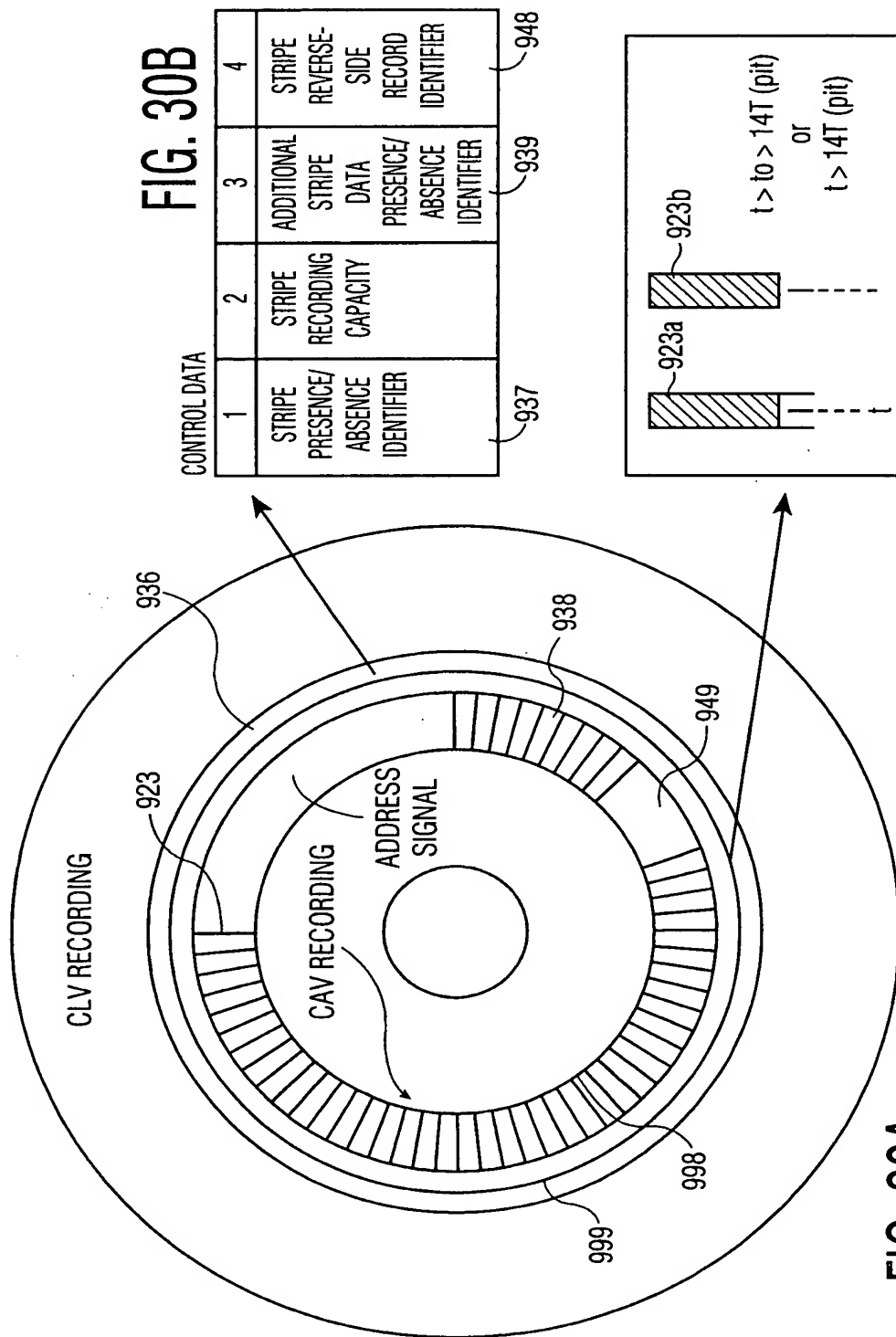


FIG. 30A

FIG. 30C

FIG. 30B

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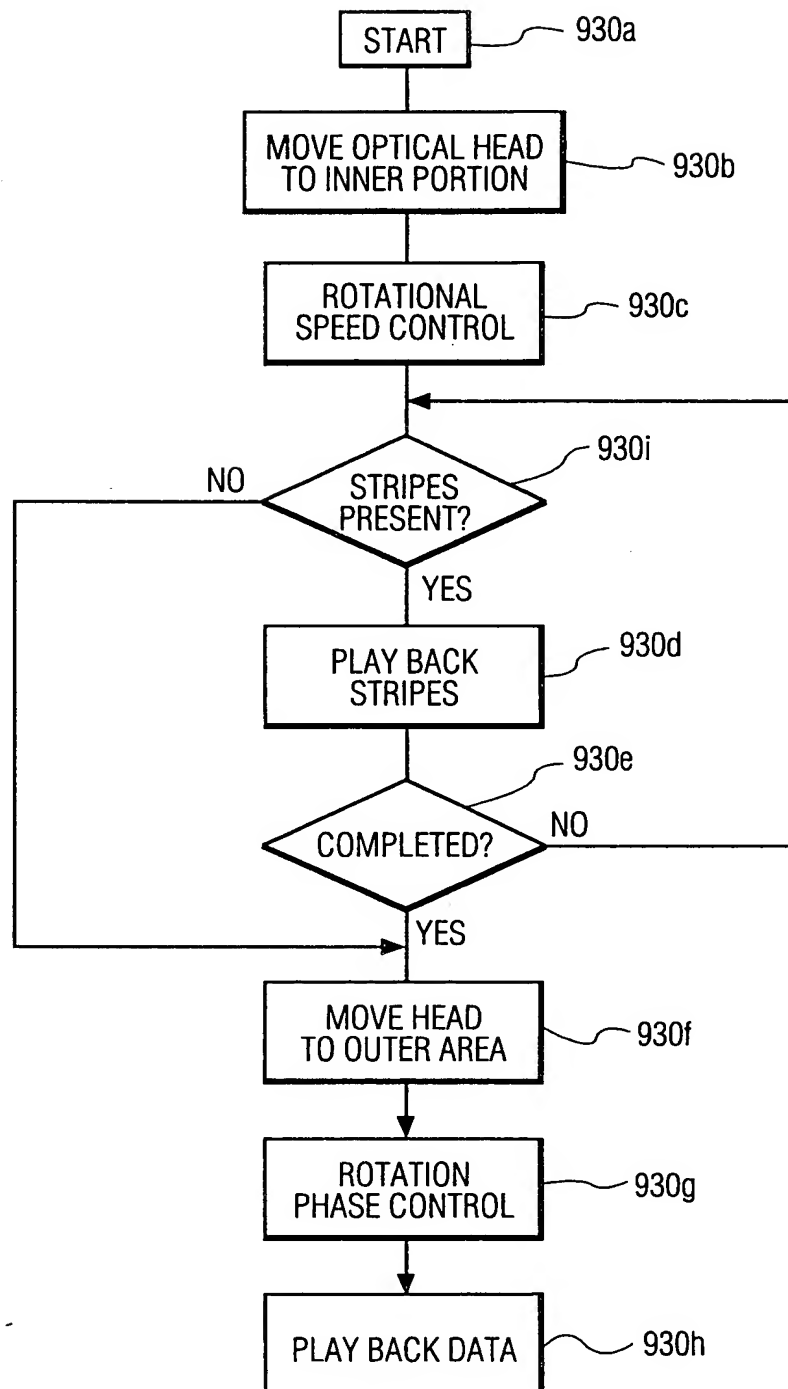


FIG. 31

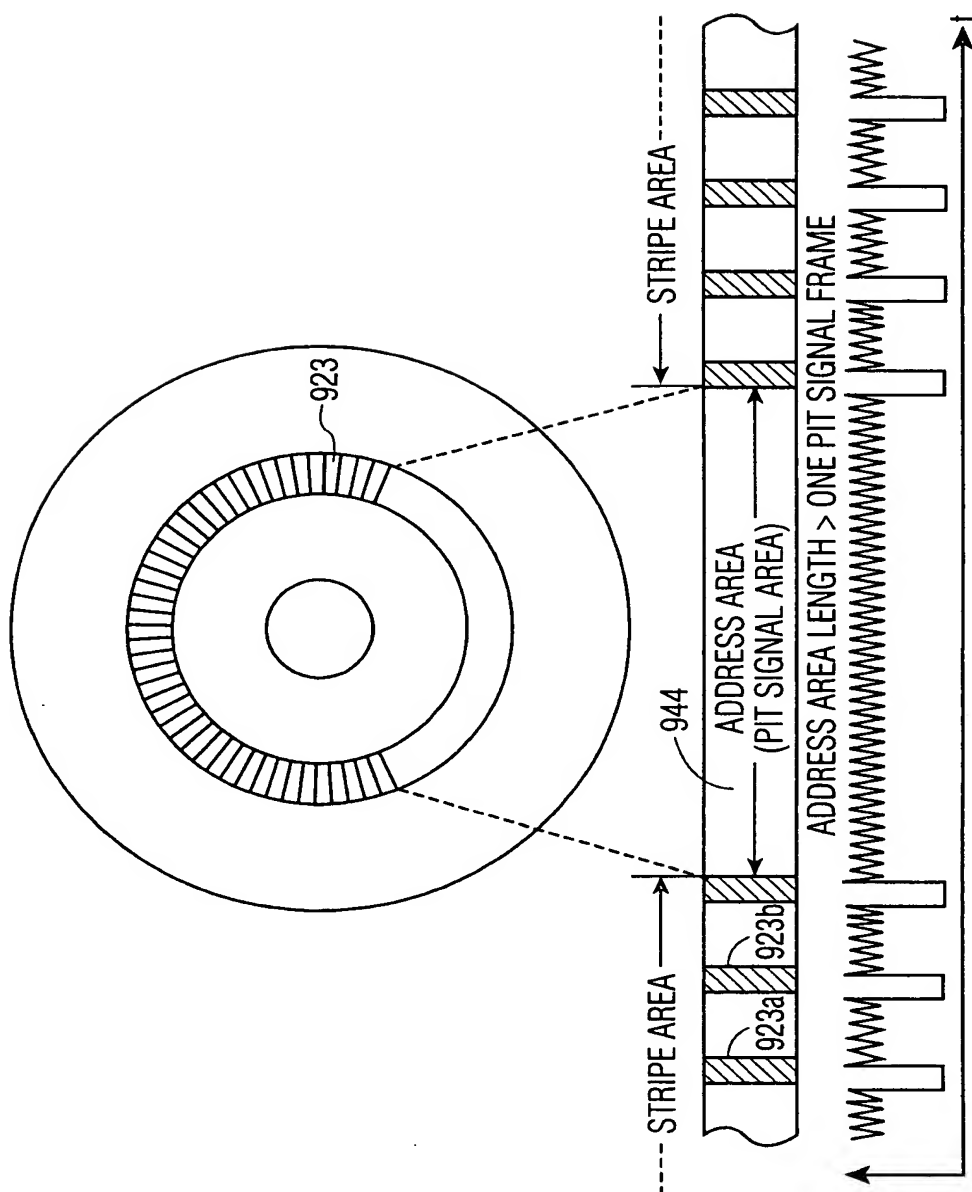


FIG. 32

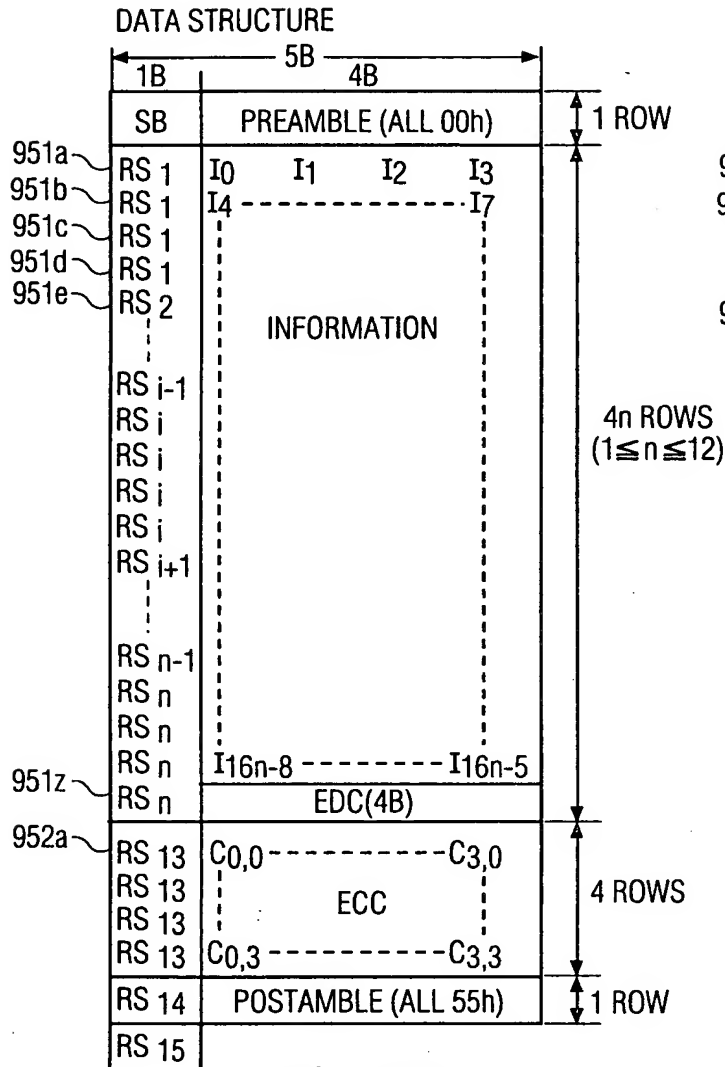


FIG. 33A

DATA STRUCTURE WHEN n=1

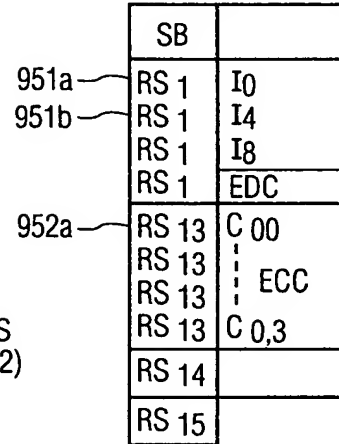


FIG. 33B

RANDOM ERROR CORRECTION CAPABILITY

BIT ERROR RATE BEFORE CORRECTION	READ ERROR RATE AFTER CORRECTION
10 ⁻⁵	1 IN 10 ¹⁰ DISKS
10 ⁻⁴	1 IN 10 ⁷ DISKS
10 ⁻³	1 IN 10 ⁴ DISKS
BURST ERROR CORRECTION CAPABILITY	

FIG. 33C

SYNCHRONIZATION CODE DATA

SYNCHRONIZATION CODE

SYNC BYTE /RESYNC	BIT PATTERN											
	FIXED PATTERN								SYNC CODE			
	(CHANNEL BIT)								(DATA BIT)			
	C ₁₅	C ₁₄	C ₁₃	C ₁₂	C ₁₁	C ₁₀	C ₉	C ₈	b ₃	b ₂	b ₁	b ₀
SB	0	1	0	0	0	1	1	0	0	0	0	0
RS ₁	0	1	0	0	0	1	1	0	0	0	0	1
RS ₂	0	1	0	0	0	1	1	0	0	0	1	0
⋮					⋮					⋮		
RS _i	0	1	0	0	0	1	1	0			i	
⋮					⋮					⋮		
RS ₁₅	0	1	0	0	0	1	1	0	1	1	1	1

FIG. 34A

FIXED SYNCHRONIZATION PATTERN

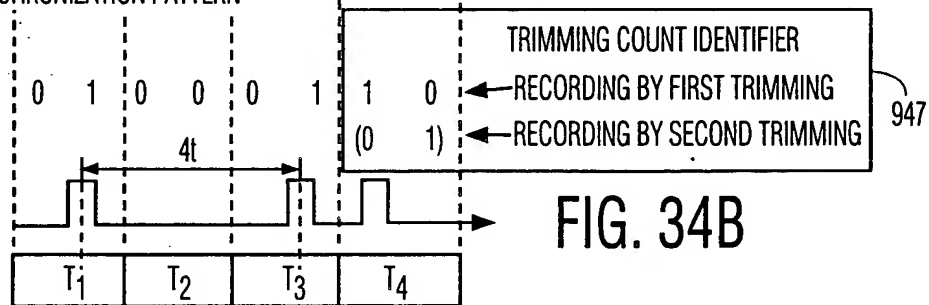


FIG. 34B

MAXIMUM CAPACITY

	RECORDING CAPACITY	TOTAL BYTE COUNT	EFFICIENCY	RECORDING AREA ANGLE	UNRECORDED AREA ANGLE
MINIMUM	12B	41B	29.3%	51 DEGREES	309 DEGREES
MAXIMUM	188B	271B	69.4%	336 DEGREES	24 DEGREES

FIG. 34C

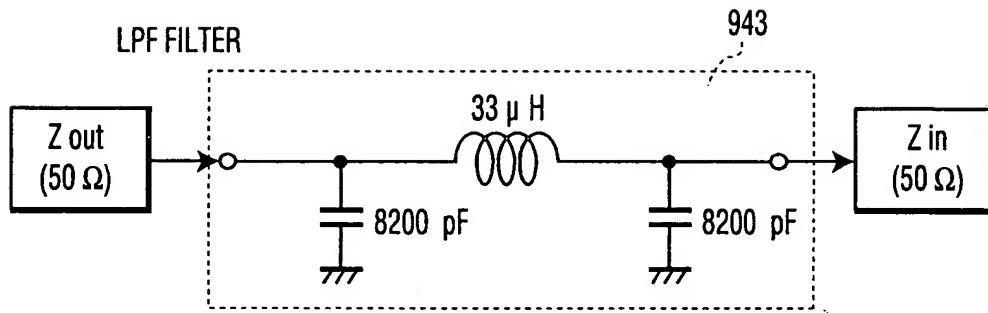


FIG. 35A

SIMULATOR WAVEFORM AFTER LPF : $I_{14L} = I_S = 0.1$ 

FIG. 35B

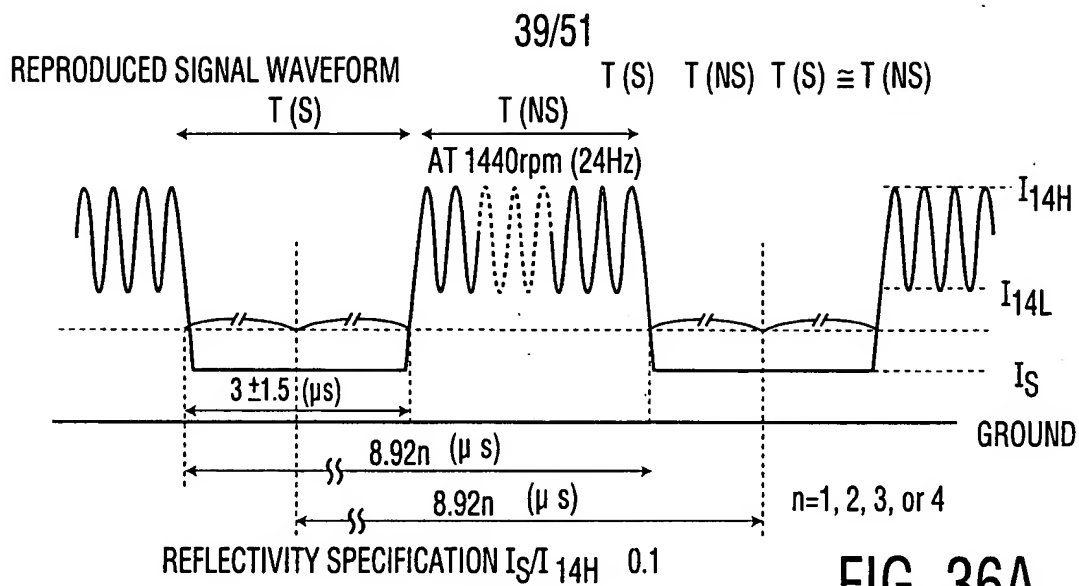


FIG. 36A

DIMENSIONAL ACCURACY OF SLIT (AT $r=22.2\text{mm}$)

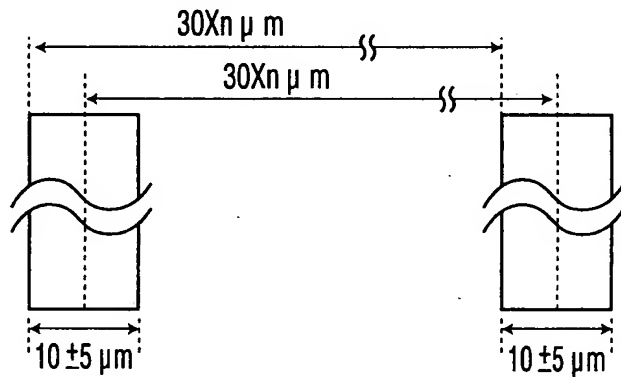


FIG. 36B

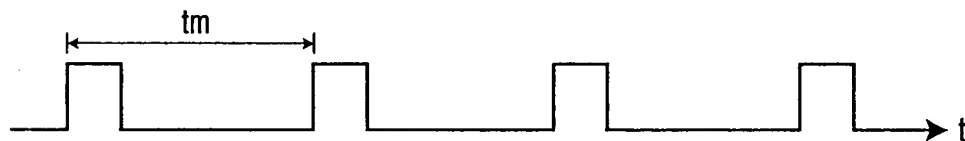


FIG. 36C

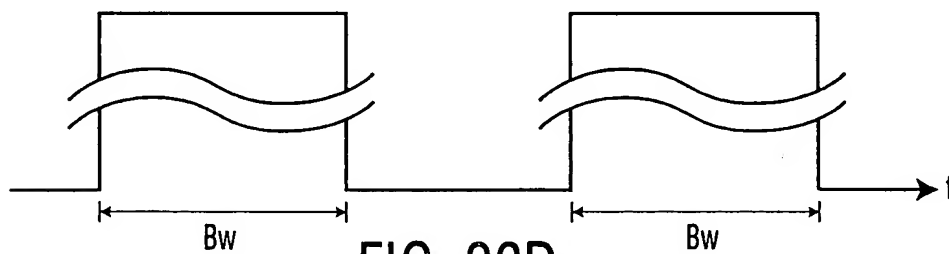


FIG. 36D

(1) TIME SLOT



FIG. 37A

(2) CHANNEL BIT

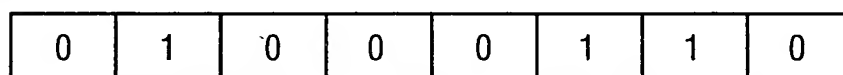


FIG. 37B

(3) RECORDING PULSE



FIG. 37C

(4) EMITTING PULSE

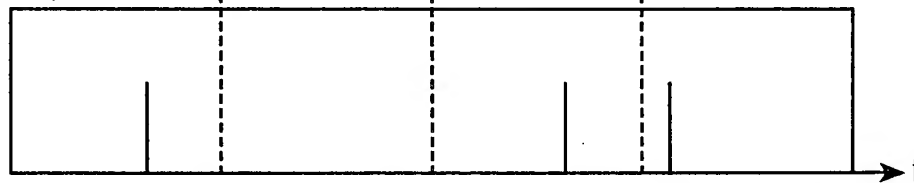


FIG. 37D

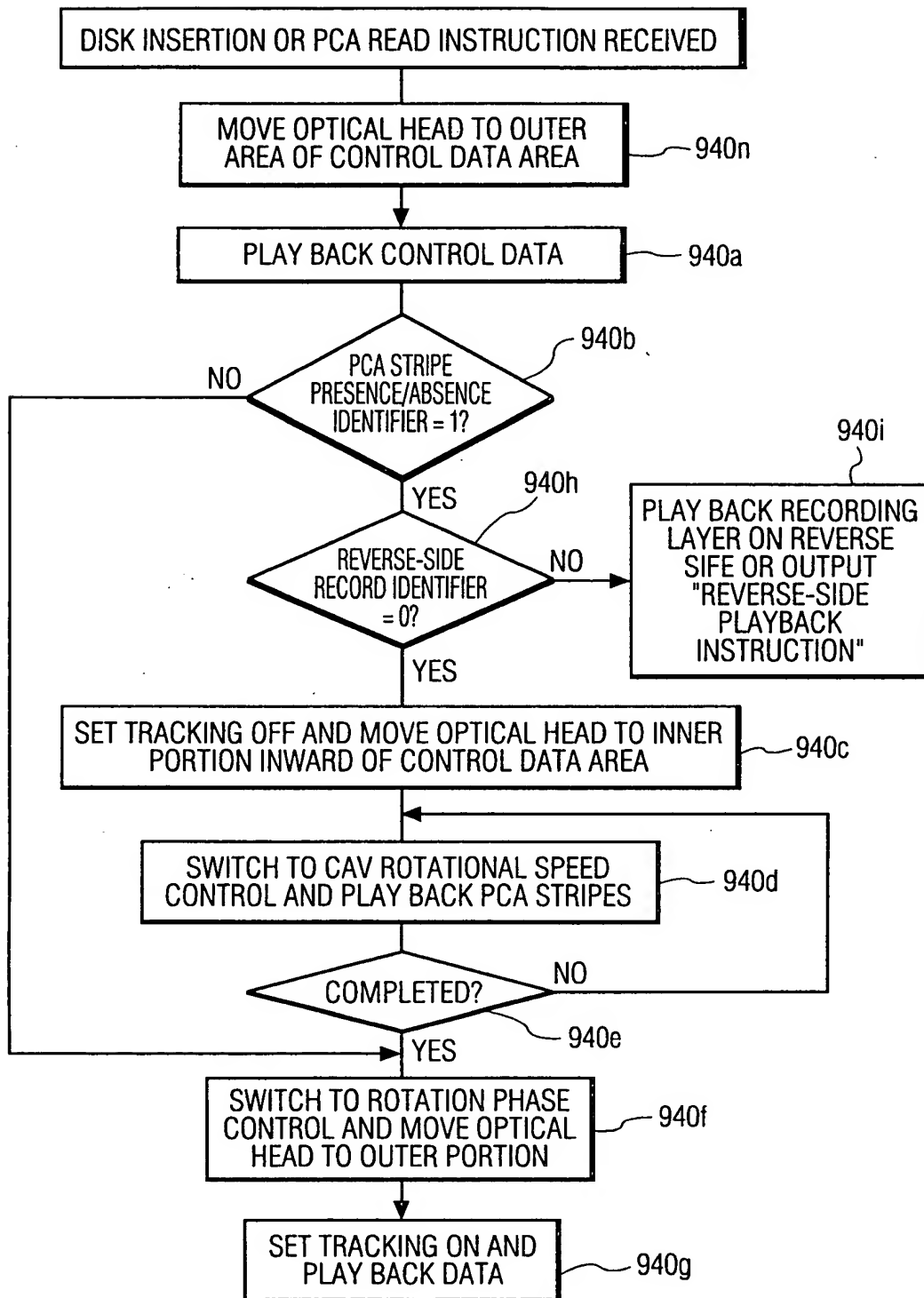


FIG. 38

2010020-10055001

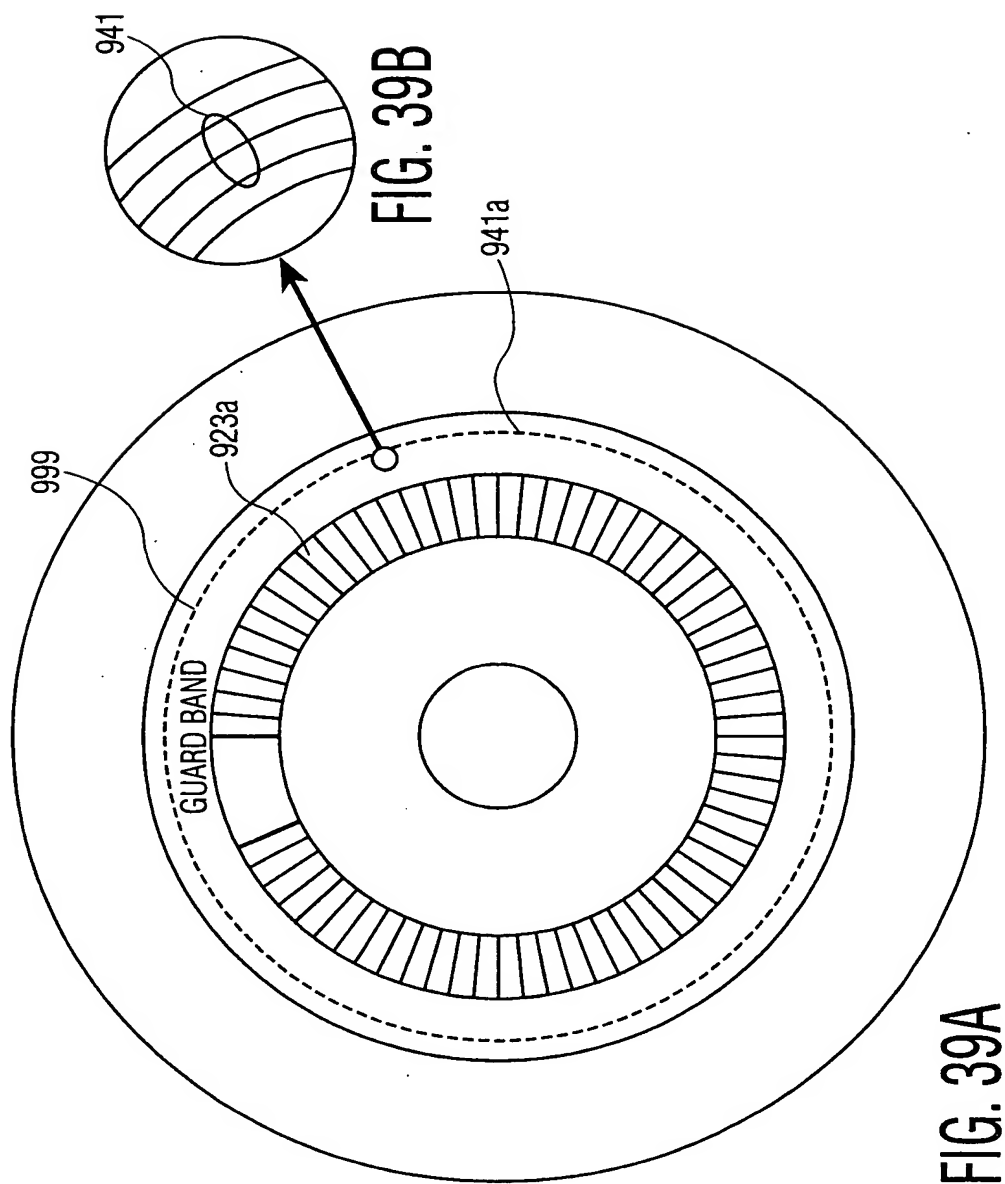
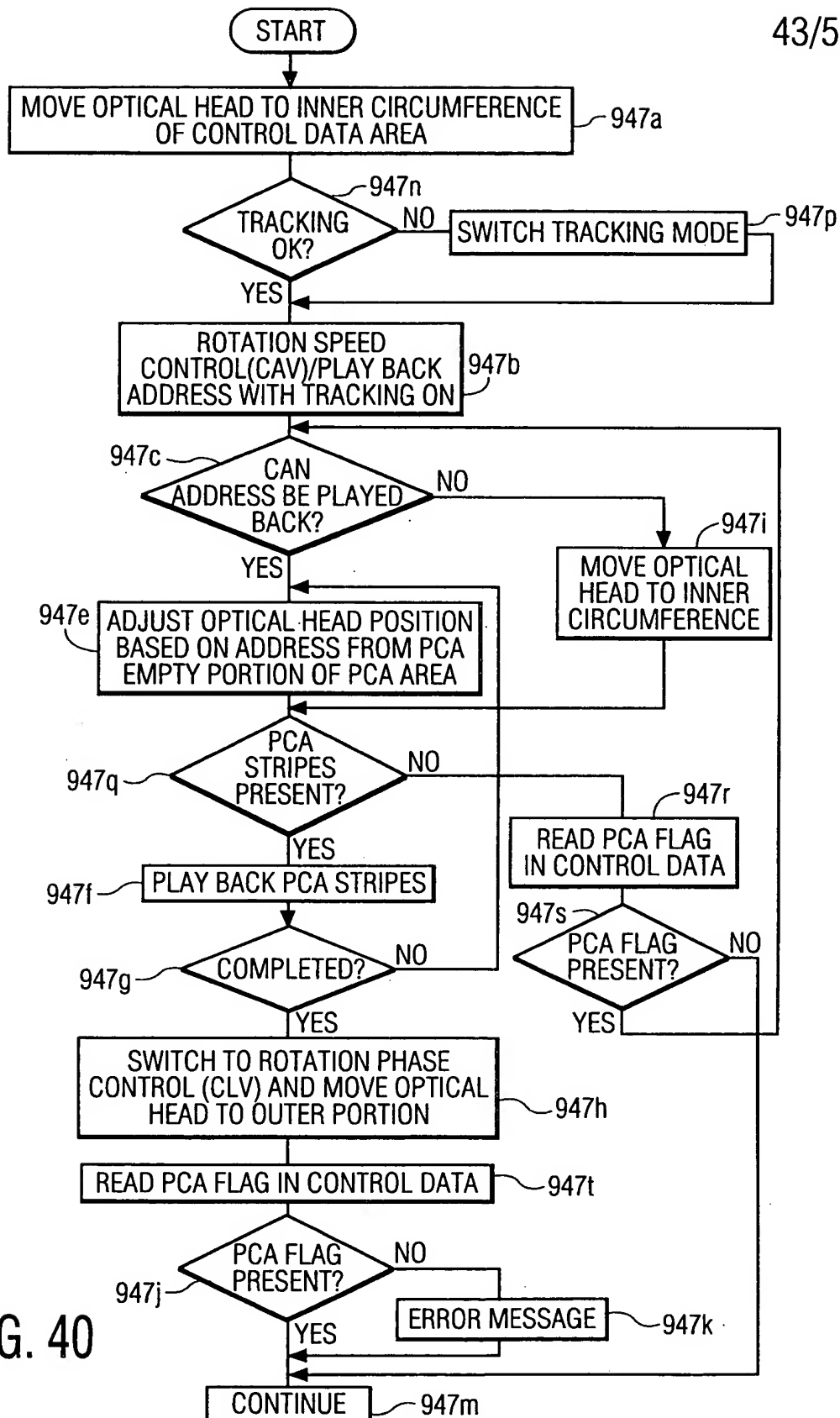


FIG. 39A



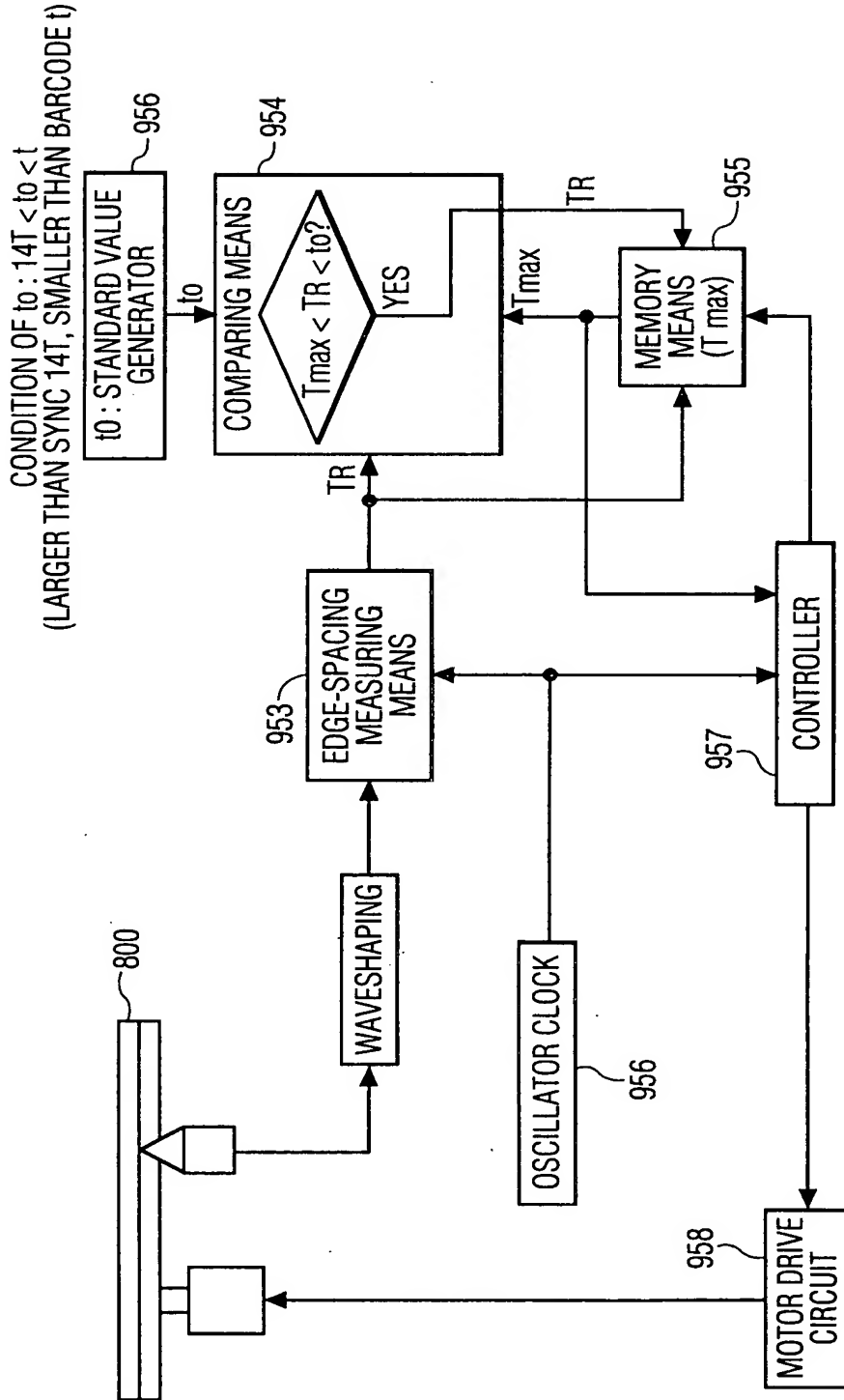


FIG. 41

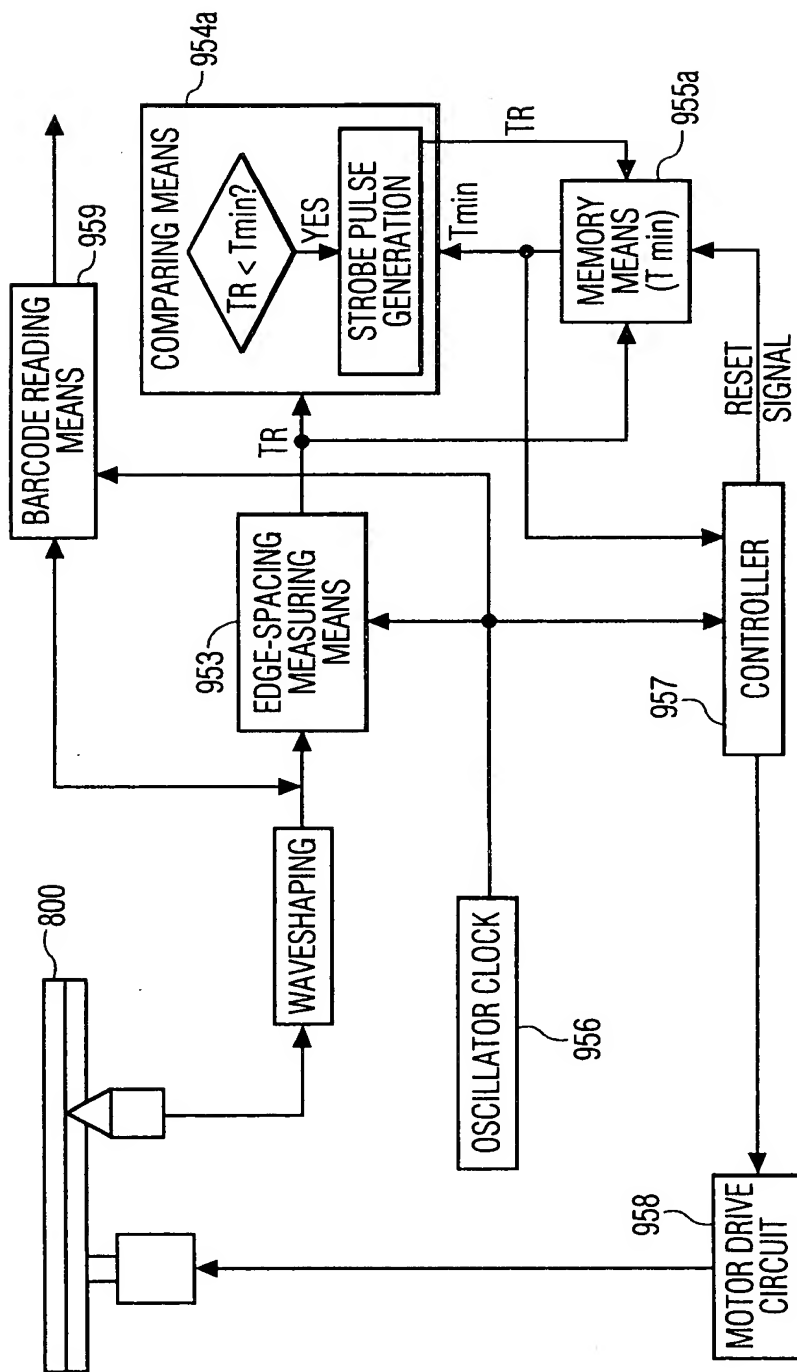


FIG. 42



FIG. 43

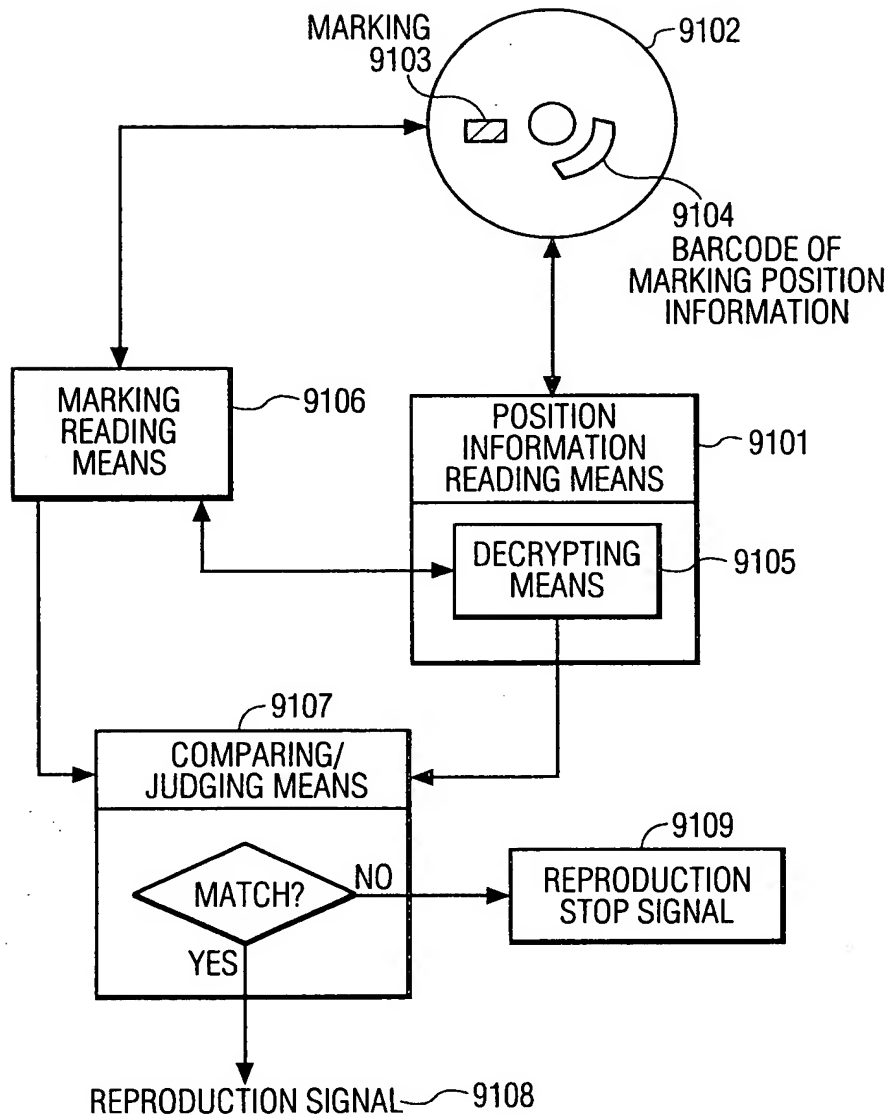
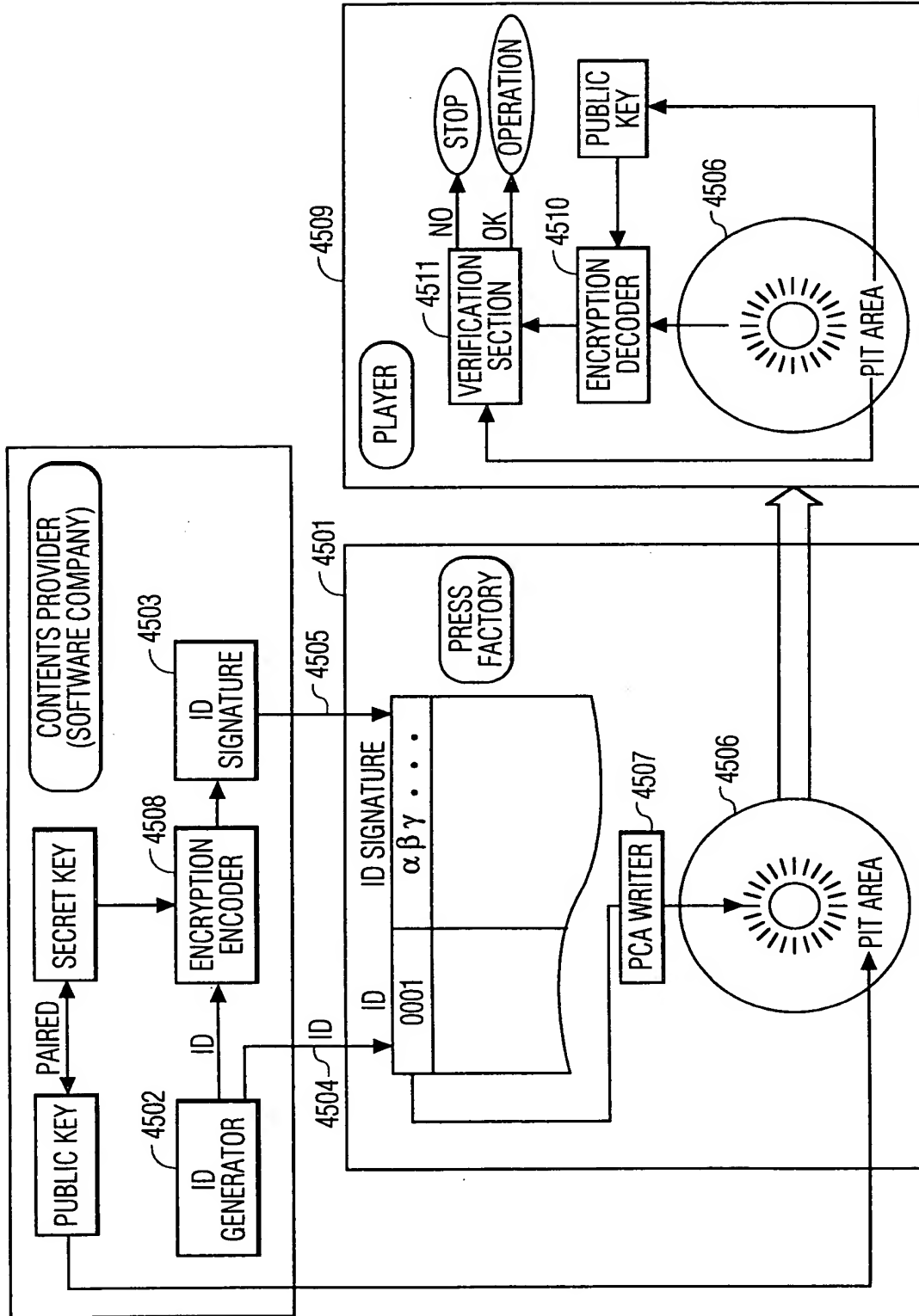


FIG. 44



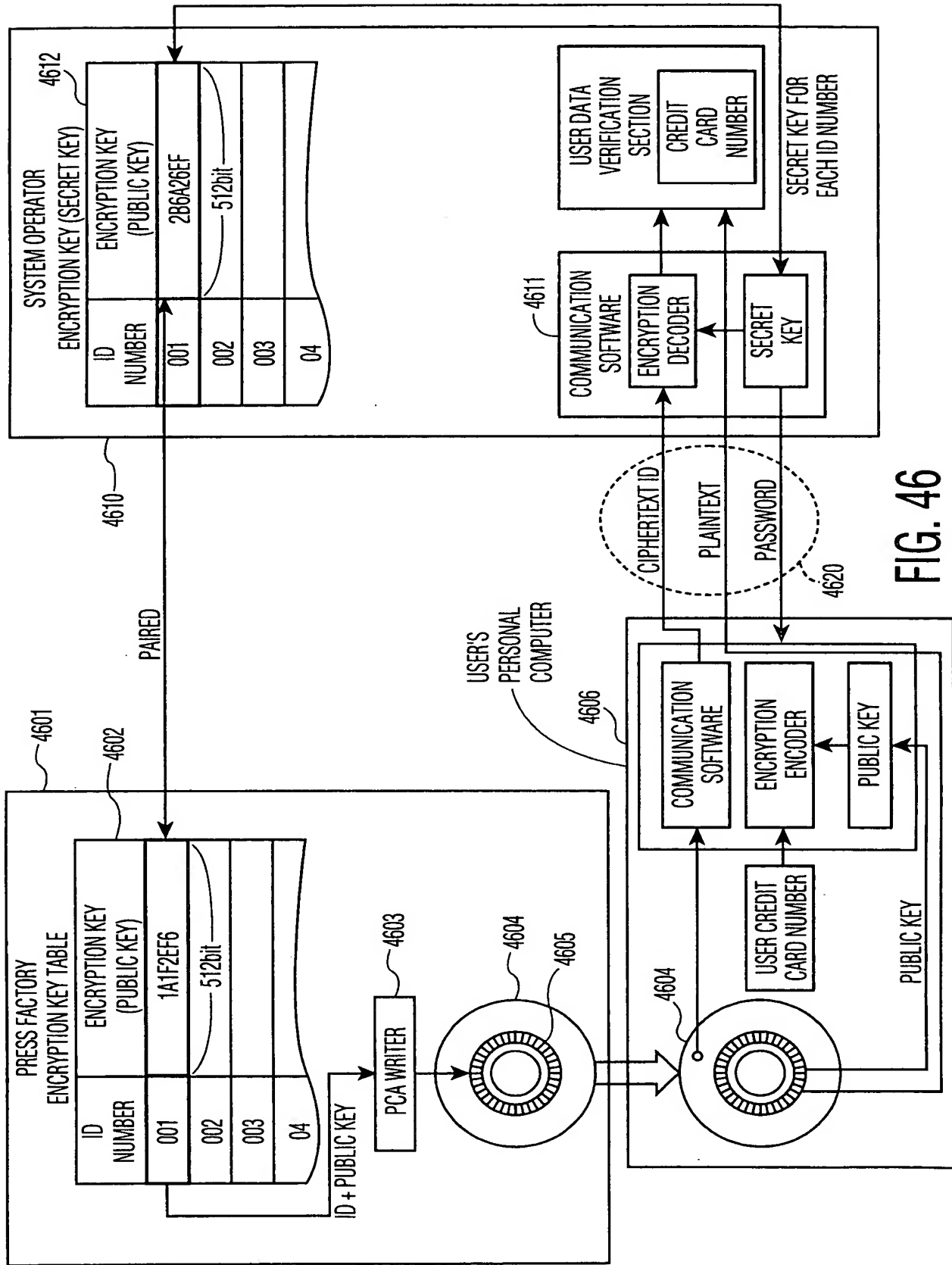


FIG. 46

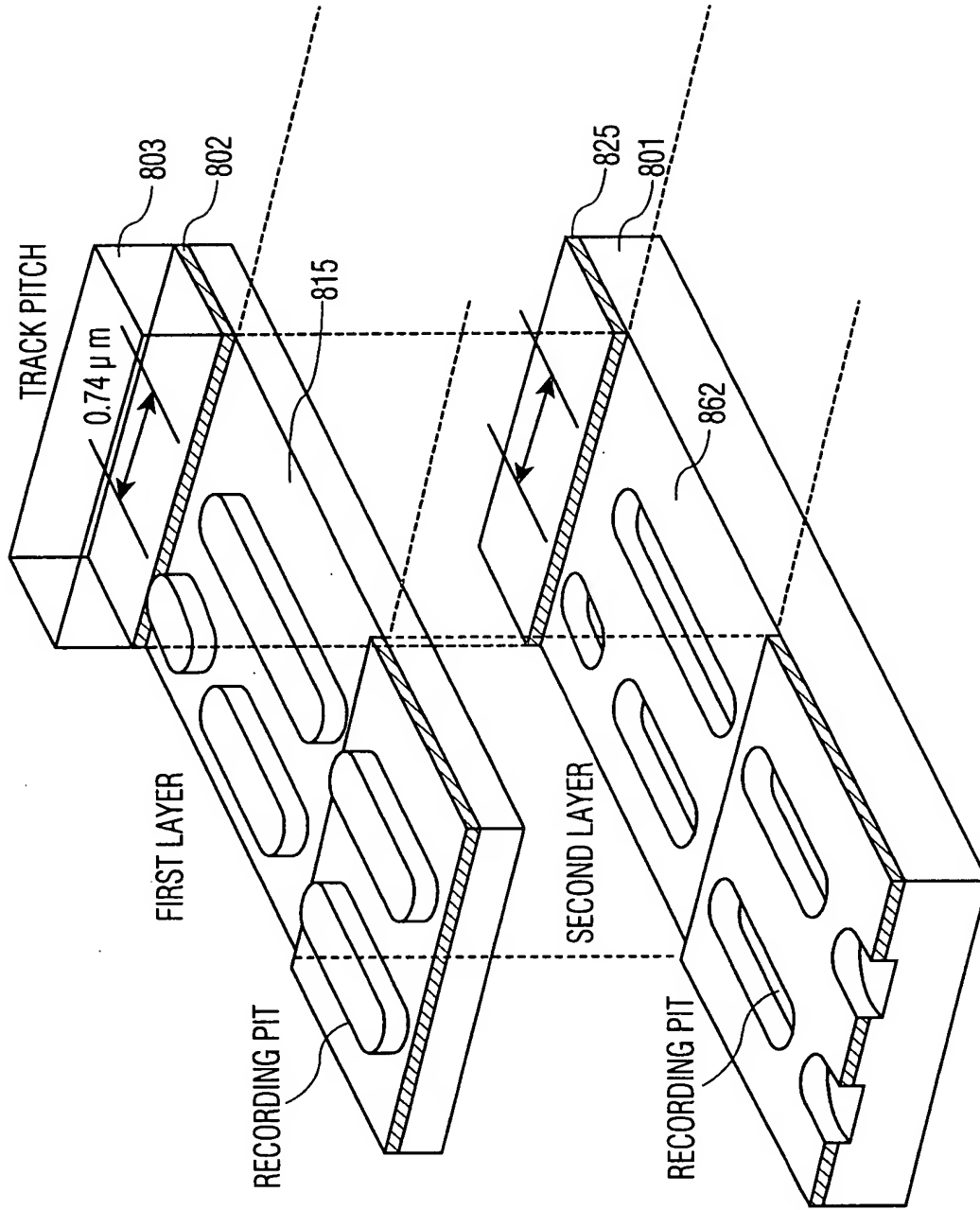


FIG. 47

